

CONTRACTORS and ENGINEERS

SCIENCES

A Bittenheim Publication

MAGAZINE OF MODERN CONSTRUCTION

AUGUST 1961



**Sand drains stabilize
highway embankment**

Page 44



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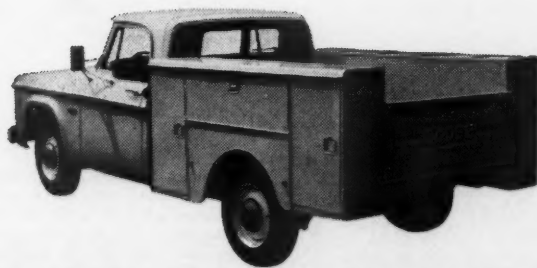
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NEW FROM DODGE FOR '61

THE FIRST AND ONLY TRUCK WITH

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Compact diet. Compact upkeep costs. Compact in everything but work capacity. A full half-ton hauler that'll do the dirty jobs every day, day in and year out. New right down to the wheel studs. New cab. New body. New and easier clutching, shifting, handling. Even a new soft sound. New standard 140 hp. inclined engine that can deliver gas mileage competitive with anything in its field, and do it on regular gas. That's how our tests worked out. And we wouldn't talk about it if you couldn't get the same results. The engine is slanted 30 degrees from the vertical for top-notch manifolding, both intake and exhaust. **THE '61 DODGE LINE?** All Dodge, all tough from end to end. Conventional and cab forward models, four-wheel drive series, Town Wagons for toting men and tools. Six and V8 gasoline power. Cummins diesels. A weight spread of 4300 lbs. GVW to 76,800 lbs. GCW. **PRICE?** The new Dart Pickup and the whole 1961 Dodge line of trucks are priced to compete with every truck coming or going. What more do you want? See your Dodge dealer now!



DODGE TRADESMAN Puts your tools and supplies right where you want them. Vertical and horizontal compartments, with locks, on both sides. Big floor area for your bulky stuff. Offered with all-new Dart Power Six or V-8 power, 2- or 4-wheel drive.

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MAGAZINE OF MODERN CONSTRUCTION

August 1961

A Bittenheim Publication

A new landmark for London

- 10 A 34-story office structure rising beside the Thames is constructed with a reinforced-concrete framework and enclosed with stainless-steel and glass curtain walls.

Something new for sand drains

- 44 Drains on a new expressway job are being put down to depths of 135 feet. Sand is delivered by rail; dredge pumps send it through a 4,500-foot line to the fill.

Custom forming for a stadium

- 52 Toughest problems on a new stadium for Washington, D. C.: forming for the curved 750-foot-diameter structure and its pitched floors, plus setting huge girders for seats and roof.

Deck rig cuts hand labor

- 31 A gantry with retractable arms is riding rails on the Galveston Bay Causeway bridge to set and move ahead steel deck and curb forms.



Expressway grading

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Saturn service gantry

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Fast pavers—big contract

Page 70



COVER:

A Manitowoc 3900 crane drives a 20-inch-diameter steel tube for a sand-drain installation on a New Jersey highway job. A Hough H-120 Payloader gets ready to dump selected sand to a McKiernan-Terry hopper attached to the leads. After the tube is filled with sand, it is withdrawn, leaving the sand drain in place.

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CONTRACTORS AND ENGINEERS

More road money

The Federal-Aid Highway Act of 1961 has ushered in an 11-year, \$53,537,000,000 road program that will complete the Interstate System on schedule by 1972 and will also assure steady progress on the ABC primary and secondary road systems.

This U. S. Bureau of Public Roads estimate of the over-all size of the refinanced road program takes into account both federal-aid money and state matching funds.

The new law authorizes \$11.5 billion more in Interstate funds to rescue the superhighway construction program from the threat of repeated spending cutbacks.

Cutbacks began with the apportionments for fiscal 1961 (just ended), which were \$400 million short of the \$2.2 billion originally authorized. Fiscal 1963 apportionments (to be made this month) would again be \$400 million short, but the new financing will make it possible to allot the full amount of \$2.4 billion as planned.

Under the old revenue arrangement a cut way back to the \$1.5 billion level was in the cards for fiscal 1964. Now apportionments will be \$2.6 billion that year, and they will rise in increments of \$100 million until they reach the \$3 billion level for the fiscal 1968 allotment to be made in the summer of 1966.

About 30,000 miles of the Interstate System remain to be built. With the new construction funds, an average of 3,000 miles a year of these superhighways will be completed over the next decade.

The 1961 law also increases federal expenditures on the non-interstate, ABC system of primary and secondary roads. In 1963, apportionments will be \$925 million. Beginning with 1964, federal allotments for this class of road building will increase \$25 million every 2 years until ABC expenditures reach the \$1-billion-a-year level.

The new authorizations will require an increase in revenue coming into the Highway Trust Fund of \$9,622 billion over the next 11½ years. The money will come from continuation of a 4-cents-a-gallon federal excise tax on gasoline and diesel fuel through 1972, and from increased taxes on tires, tubes, tread rubber, and heavy trucks.

Congress has also appropriated for the Highway Trust Fund some of the excise taxes on new trucks, parts, and accessories that were heretofore diverted to the general treasury fund. This involves about \$150 million a year, with the first transfer scheduled to take effect approximately a year from now.

The 1961 law also extends until July 1, 1963, the billboard control provisions of the 1958 law. Under this section of the law, the federal government increases its normal 90 per cent contribution to Interstate construction by one-half of one per cent for those states that agree to control outdoor advertising adjacent to the system. So far, 14 states have made such agreements.

ESTIMATED FEDERAL-AID APPORTIONMENTS AND STATE MATCHING FUNDS FOR INTERSTATE AND ABC PROGRAMS COMBINED FISCAL YEARS 1961-1971

(Millions of Dollars)

Fiscal Year	Federal Funds	State Matching	Total
1961	2,673	1,070	3,743
1962	3,074	1,110	4,184
1963	3,325	1,190	4,515
1964	3,550	1,230	4,780
1965	3,650	1,250	4,900
1966	3,775	1,280	5,055
1967	3,875	1,290	5,165
1968	4,000	1,330	5,330
1969	4,000	1,330	5,330
1970	4,000	1,330	5,330
1971	3,885	1,320	5,205
	39,807	13,730	53,537

Source: Bureau of Public Roads, U. S. Dept. of Commerce.

Read this amazing comparison between Air Compressors. It's worth thousands of dollars to know

Compressor Rating, Cfm	Compressor "J"	Compressor "X"
	900	900
Hammer Operated	Vulcan #0	Vulcan #0
Blows per Minute	65 constant	58 only at max.
Gauge Pressure, Psi	105 constant	100 only at max.
Engine Speed, Rpm	1500 constant	900 to 2000 variable

JOB PROBLEM: Driving 85' long, 10" diameter cylindrical piles for a large steel mill foundation.

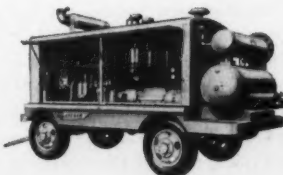
PROCEDURE: Contractor elected to drive with two Vulcan #0 single acting hammers rated at 50 blows per minute, requiring a minimum of 841 cfm of air @ 100 psig for peak performance. For power, he chose two "900" compressors of leading makes, one being a Jaeger 900 Roto Air Plus.

PERFORMANCE: The Jaeger, when driving, maintained a uniform constant speed of 1500 rpm and uniform gauge pressure of 105 psig. The hammer delivered 65 blows per minute with hammer air control valve only partially opened. (When approaching refusal, 20 blows were needed per inch of penetration.)

The other compressor, when driving, operated at surging speeds from 900 to 2000 rpm. It never maintained a working pressure above 100 psig. The hammer never delivered more than 58 blows per minute. (Manufacturer's service men, on this job, made several adjustments in the variable speed control but were unable to smooth out the speed.)

POSITIVE PROOF: To double-check this observed difference in performance, the contractor changed over the air lines from his compressors to the opposite hammers. The Jaeger "900" gave the same superior performance with the other hammer as it had done with the first. The performance of the second compressor was not improved.

PAY OFF TO YOU: On any job requiring 75 cfm to 900 cfm of air, a Jaeger Roto Air Plus will maintain steady full pressure at slower engine speed, using less fuel and with less wear on engine and compressor than any other rotary vane compressor using a comparable engine. A Jaeger saves you money. On big air jobs you save big money. Let your Jaeger distributor prove this. Ask him.



JAEGER ROTO AIR-PLUS

THE JAEGER MACHINE CO., 701 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

Worldwide sales and service through Jaeger International Corp., Apartado 137, Panama, R. P.

For more facts, use Request Card at page 18 and circle No. 252

Editorial

By their signs . . .



To encourage foreign travel in the United States, Congress in its current session has passed a law putting the government more or less into the tourist business. By encouraging foreign tourists to come to these shores, the present administration hopes to improve international relations, aid commerce, and stimulate the flow of dollars into the country.

In 1960, some 602,000 foreign tourists traveled about the U.S.A. as con-

trasted to the 1,634,000 Americans who toured foreign lands. These figures do not include visits from our neighboring Canadians and Mexicans. While the work of the newly formed U.S. Travel Service is necessarily based on a long-range program, the department's immediate objective is to bring more tourists here from abroad and prepare Americans to receive them.

Voit Gilmore, director of the new

bureau, feels that one of the national attractions the incoming tourists will be most interested in seeing is our highway network. He also believes that most of the tourists will be in the upper income brackets, and will include many business and professional people who will add a sight-seeing tour to their meetings, conferences, and business transactions in this country.

With this in mind, we might raise the question whether our highways are adequately posted with simple, easy-to-understand signs that our foreign, as well as domestic, road users can readily comprehend. This is especially applicable to the 41,000-mile Interstate System as its construction advances year by year. These are the roads that the new crop of tourists will be mainly using.

Controversies have already risen in various parts of the country over the posting of markers and the numbering system on the Interstate. In New York, for example, in the interest of national uniformity, the state requires that an Interstate highway be posted only with its new number and compass heading of

the traffic direction. But local authorities in cities and counties want also to identify the route with its local name points of direction, to avoid confusing the driver who has grown accustomed to the old markers.

As everyone knows, existing U.S. federal highways going east-west have even-number designations progressing from north to south. North-south highways are odd-numbered, with the progression from east to west. On the new Interstate System markers, the low odd numbers start in the west on the north-south highways, and increase toward the east. On the east-west Interstate routes, the even-numbered progression of markers is from south to north.

Since everyone must eventually get accustomed to this complete changeover as regards the markers on the new Interstate System, might not this be the propitious time to adopt the international road signs, too? Such signs are in use throughout Europe, having been accepted as standard by international agreement. They do not indicate place names but convey information, give instructions, or warn of a coming hazard

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Surveying Washington

by E. E. Halmos, Jr.

Setting aside construction work for "small business" is beginning to give Congress some uncomfortable second thoughts. Evidence is starting to pile up that the practice doesn't result in the best deal for the taxpayer and can be detrimental to contractors. Here's the situation: Under agreements between Small Business Administration and the Defense Department, construction contracts (except for Capehart housing) of less than \$500,000 are set aside for small business. Bidding is limited exclusively to contractors who averaged less than \$5 million gross business annually during the past three years, are independently owned, and are not dominant in their fields. The only exceptions permitted are (1) where there may not be enough bidding to guarantee competition and a reasonable price; (2) where the project is beyond the capability of small contractors; (3) where public safety demands speed beyond the capacity of small contractors.

The government loses out by the set-aside process, according to Rep. Phil Weaver (R., Nebr.), who says "the government doesn't get the benefit of free and open competitive bidding on these jobs." In a speech to the House, Weaver said that the rigid

interpretation of the small-business rules "hamstrings" the judgment of contracting officials, and he cited numerous instances where major contractors were cut out of bidding on supplemental work by the small-business restriction. In one instance cited, a small-business contractor was, in effect, ordered into the picture by an SBA certificate and thus received a contract to manufacture some 75,000 pieces of concrete matting (in a government-owned plant) for use along the Mississippi River. Poor management, much overtime, and a high percentage of rejects will cost the government about \$100,000 more than the original contract price, the congressman said. Weaver's point was that Small Business Administration apparently can overrule the judgment of engineering officers of the government; and that the rigid set-aside program works a grievous injustice on many contractors.

The huge new housing bill ought to spark a lot more apartment-unit and other construction. The bill is either a "monstrosity" or a "moderate" measure; will cost either \$4.9 billion or \$9.0 billion over four years or more; will either ruin private enterprise and cause inflation or will boost the private sector. It all depends on which

side of the political fence you stand. For contractors and engineers, perhaps most important is the heavy emphasis on planning in general; on programs for urban transit and community facilities; and the heavy encouragement given to nonprofit and other groups for construction of multifamily housing for so-called "modest-income" (top of \$6,000 annually) families, plus the addition of 100,000 new public-housing units.

Major developments on highway included approval by Congress of a new financing bill that seems to assure orderly progress and completion of the Interstate System by 1972-73; conclusion of hearings into bad work and considerable corruption in New Mexico; and revelation of some of the basis for demands for an investigation into highway work in Massachusetts.

Attempts to cut back taxes on trucks and gasoline dealers were beaten back by House conferees; Senate amendments that would have cut the Highway Trust Fund \$525 million in revenues (by reducing the tax on tread rubber and allowing credit for "shrinkage" to dealers) were defeated; and a third amendment was accepted—to defer for one year the diversion of the remaining share of federal excise taxes on buses, trucks, and trailers from the general fund to the trust fund. House conferees figured this would cost the trust fund \$143 million in the year, but hoped it

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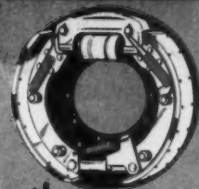
All this without a written word in any language; merely by symbols that can be easily remembered.

Danger signs, for example, are triangular in shape, and may call attention by a symbol to curves, hills, intersections, etc., that lie ahead. Circular signs instruct as to speed limits, turns, directions to follow, etc. Square or rectangular signs offer information in symbols as to the whereabouts of telephones, main roads, parking facilities (see photo), and other aids to motorists.

These signs can be readily understood by a person of any nationality, even by one who cannot read the language of the country. In the interest of highway safety, the United Nations is sponsoring an agreement to maintain uniformity in road markings of all types, and many European countries have already ratified this pact. As to the U.S.A., the cost of installing such international road signs on our Interstate System should be no greater than the cost of the conventional type of sign. The benefits of such signs in uniformity and safety to all are too great to be bypassed.

wouldn't have too much over-all effect. The truckers won one point, however: they defeated an attempt to increase registry fees.

Highway hearings of the House Special Public Works Subcommittee on Public Roads revealed an almost incredible story of arrogant disregard for the public, of obvious political influence by contractors and others, of corruption and misfeasance by engineers and other state officials; and of the need for closer surveillance of state operations by the Bureau of Public Roads. The hearings are a very serious black eye for the entire construction industry. They had one immediate effect: BPR shut down on all contracts in New Mexico, pending state programs to correct the flagrant abuses shown in the hearings; it "blacklisted" nine contracting concerns that took part in corrupt activities; and it also blacklisted projects on which eight highway department engineering employees have been associated. A second effect: BPR has asked Congress for 200 additional employees—most of them investigators to check on state and contractor operations. Democratic and Republican members of the special committee were in complete agreement on the New Mexico situation. Both sides submitted statements expressing shock and disgust at a situation where two state highway commissioners continued to do business with contractors (selling machinery, tires, fuel); where a contractor had enough power to get



NEW!

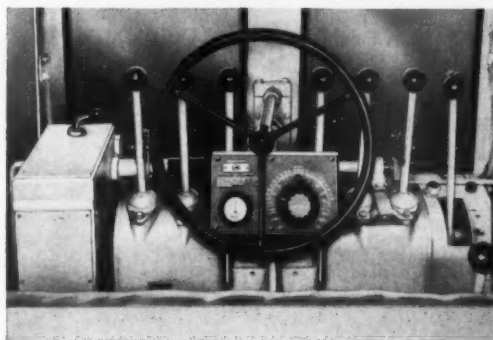
Self-adjusting brakes

now available on LW graders. They're standard equipment on all models. Operating principle is the same as on some 1961 passenger cars and trucks. You simply apply brakes while backing up—and brakes adjust automatically.

Get more work-output per dollar invested

Watch a LeTourneau-Westinghouse grader at work against any machine in its class. You'll see how it always puts out more work at less cost. That's because LW graders give you more *usable* power for extra blade-thrust... more transmission-gear choices for working, maneuvering, traveling at fastest practical rate... and unequalled experience in grader research and engineering skill for lowest maintenance. Compare the grader features listed at right... then ask your LW Distributor for an on-the-job demonstration.

7 sizes, 85 to 190 hp.



LW graders offer you these production-boosting advantages

8 forward speeds, 4 reverse gears, and 3 optional extra-slow creepers on the 5 standard-shift models, 85 to 160 hp. 145 and 190-hp POWER-Flow® models have torque converter, speeds to 26 mph.

Super-strong one-piece frame, for rigid support, trouble-free performance.

Full-floating drive axles and anti-friction power train for more usable power, less wear, less maintenance.

Welded bar-and-plate front axle (strongest in the industry!), arched to give up to 28" ground clearance.

Big blade-circle, 63" diameter for steady blade control.

Full-sweep visibility, operator can see all critical areas of blade, plus road ahead... sitting or standing. He also has "handy-reach" power controls.

Easy moldboard tilt adjustment, operator can tilt blade-angle in seconds.

Rubber-mounted engine, to minimize vibration.

Preco Dial-A-Slope blade control—one of 7 LW grader attachments—makes it possible to automatically maintain desired cross-slopes while grading. Operator merely sets the Preco "dial" for desired slope—puts either end of the blade under automatic control—and then need only follow his reference line. Result: He gives you a finished grade in up to half the time it usually takes.

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offending inspectors transferred off his jobs; where project engineers "rented" sometimes nonexistent machinery to contractors under their jurisdiction at exorbitant prices; where specifications were completely ignored, tests obviously falsified, etc. The only Republican comment was that the hearings didn't go far enough into the ramifications of the political situation that permitted such conditions.

A lot of construction money is involved in appropriations for departments not directly considered concerned with construction. The Soil Conservation Service of the Department of Agriculture got \$53.8 million for expenditure on its "Public Law

566" projects—watershed protection works, drainage and the like, compared to the \$36.8 million it had for this purpose in fiscal year 1961; the Geological Survey gets about \$8 million to pay for cooperative water projects (mostly drilling and exploration of sources, quality, etc.); \$139 million out of National Aeronautics and Space Agency's budget goes for construction of facilities (mostly buildings).

First saline-water conversion plant was recently dedicated at Freeport, Texas. Following almost immediately upon the event, the Kennedy administration has asked Congress to approve a greatly expanded saline-water conversion program. Construc-

tion time limitations would be extended for 15 years, and size of the plant raised to 50 mgd. under the new bill.

Buildings near commercial airways that are over certain minimum heights will henceforth have to be approved by the Federal Aviation Agency before construction will be permitted. That's the gist of a new regulation (Part 626 of the Regulations of the Administrator, FAA) that went into effect July 15, after nearly a year of preparation. Generally speaking, any structure higher than 150 feet, extending into an airport landing area approach, or within 500 feet of the center line of any runway, will require FAA approval.

Tricks of the Trade

Aluminum braces— lightweight, adjustable, and shop-built

For speed and accuracy in plumbing high wall forms, these contractor-built aluminum braces are hard to beat. Robert R. Anderson Co., Chicago, made good use of them while building the 35-foot-high retaining walls on a depressed expressway in Chicago. They are fairly easy to build, and many contractors will find them useful.

In the photo, the light-colored aluminum braces are not to be confused with the H-beams that penetrate the lower part of the forms. The H-beams

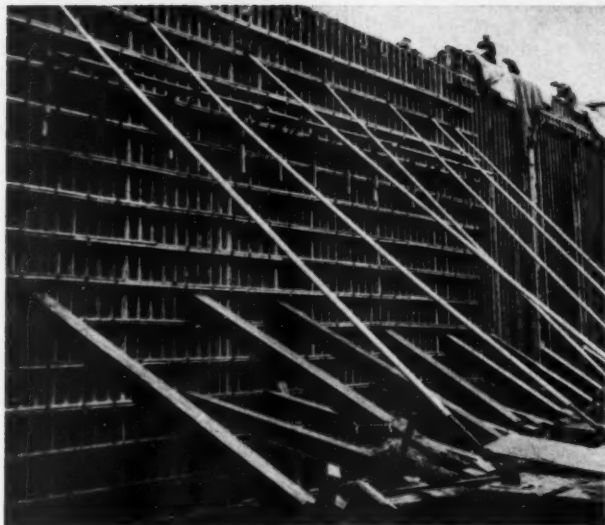


hold back a wall of steel sheeting on the far side of the retaining wall under construction.

The telescoping aluminum braces are adjustable from 20 to 36 feet. The fine adjustment is made by sliding the telescoping sections through bolt-and-eye stops at 6-inch intervals. The brace weighs in the neighborhood of 75 pounds.

Essentially, the brace is built of three lengths of pipe. The upper and lower lengths of 2½-inch pipe telescope into the middle 3-inch pipe. All pipes contain holes drilled at 6-inch centers to receive stop pins for the medium adjustment in the length. Upper and middle pipes are aluminum; the lower pipe is steel. Built into the lower end of the steel pipe is a screw-type jack with handles for turning.

The jack is attached to a pivot cleat that can be nailed down to a heavy wood mat. At the upper end of the brace is a steel bracket for making the connection with the form. The U-shaped bracket slips on a vertical stud. A bolt, passing through the stud and the bracket, holds the brace to the form.



LUBE LOGIC

Don't let storage tank contaminate gasoline

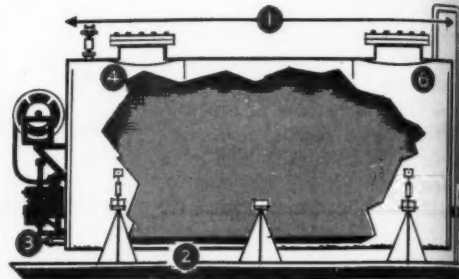
One of the basic essentials of good equipment performance is clean fuel; and the best way to make sure the fuel you use is as clean as the fuel you buy is to keep your own storage facilities up to snuff.

What does it take to make the ideal gasoline storage tank? Here are some of the specifics that Texaco engineers have found to be most important.

The ideal gasoline storage tank has:

1. Plenty of room. Every time you fill a tank you stir up the sediment at the bottom. The bigger the tank, the less it has to be refilled, and the longer the sediment stays settled on the bottom.
2. Welded construction.
3. A 1½" drain valve, located at the lowest point.

New tips for



4. A large hand hole plate or manhole, to make cleaning easier.
5. A suction line to the gasoline pump located several inches above the tank bottom, to avoid drawing out the sediment and condensate.
6. A fine-mesh strainer over the filler opening.

Four tips to keep hydraulic oil clean in storage and handling

Even the best maintenance techniques won't keep your hydraulic equipment on the move if you don't keep the oil clean while it's in storage and while it's being put into the machine. Here are four simple precautions that will assure you of getting nothing but clean, clear oil in the hydraulic system:



1. Store the drums on their sides, indoors if possible, but in any event under some sort of shelter.



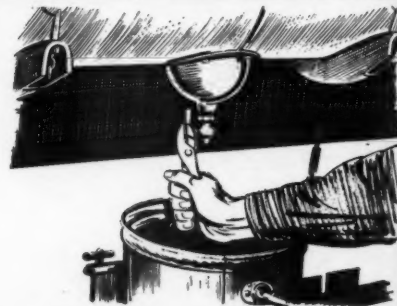
2. Before you open a drum, clean the top so that no dirt or water can fall into the oil.



3. Make sure that you use only clean hose and containers in transferring the oil from the drum to the equipment.

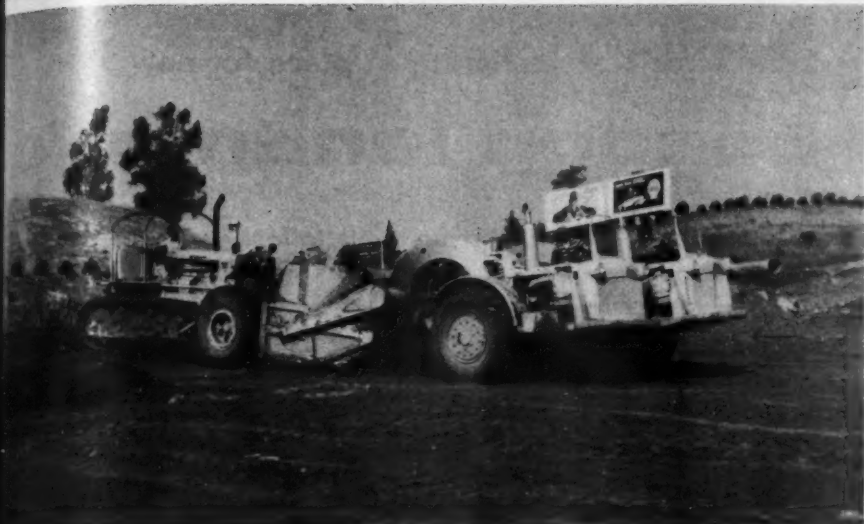


4. Filter the oil as it enters the reservoir on the machine. If the fill pipe on the equipment doesn't have a filter, use a funnel fitted with a 200-mesh screen.



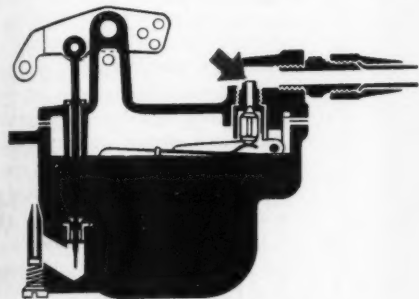
Protect diesel fuel injector with periodic tank drains

Dirt and water in diesel fuel can ruin a fuel injector in no time. Even if you keep the fuel clean during storage, there's still a good chance that temperature changes will create enough condensation in the fuel tank on your rig to start rusting in the injectors. Several operators have pretty well solved this problem by partially draining the fuel tank once or twice a week. Simply draw off about a gallon of fluid through the drain valve at the bottom of the fuel tank. You lose some fuel this way, but you also get the accumulated water and other contaminants clear out of the fuel system. The cost of the fuel you drain off is a small loss compared to the repair bills you save on the fuel injectors.



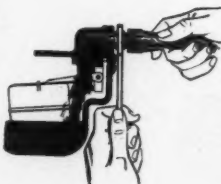
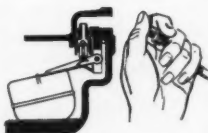
ONE TRACTOR PUSH-LOADS TWO SCRAPERS

for more efficient maintenance



Quick cure for carburetor flooding

Repeated stalling and hard restarting is often caused by a tiny particle of grit, which lodges under the carburetor float needle valve, lets too much gasoline into the carburetor and causes flooding. You can often solve the problem with the following routine: disconnect the fuel line at the carburetor and plug it with a cork, a pencil or anything else that will fit. Then run the engine until you've used up all the fuel in the carburetor. Reconnect the fuel line, crank the engine, and the rush of gasoline into the empty carburetor will often flush the foreign matter out of the needle valve seat. If you have a friend but no cork, have the friend start the engine while you plug the disconnected line with your thumb. Same difference.



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Something new has been added to double push-loading. And this something can be profitably put to use by many contractors in the earthmoving field.

The double push-loading of scrapers has become a common practice on many earthmoving spreads. Two tractors, fitted with rear push blocks, line up in tandem and push a big scraper through the loading cycle. This often increases the efficiency of the operation.

One of the Gordon H. Ball Co. earthmoving crews recently came up with a quite different type of double push-loading. In this case, one tractor push-loaded two scrapers—and not scrapers working in tandem, but side by side.

A spread of the small Euclid S-7 scrapers was being used to haul back-fill from stockpiles and place it in a very confined area behind the concrete walls of a flood-control channel. The push tractor was a Caterpillar D8.

When two of the scrapers arrived at the stockpile close together, neither had to wait for the other to be loaded. They simply lined up side by side as close together as possible. The D8 operator maneuvered his dozer



blade so as to engage the push blocks of both scrapers and then started pushing.

The scraper operators loaded in the usual manner, taking care to stay close enough together. The D8 had plenty of power to load both scrapers almost as quickly as it would ordinarily load one.

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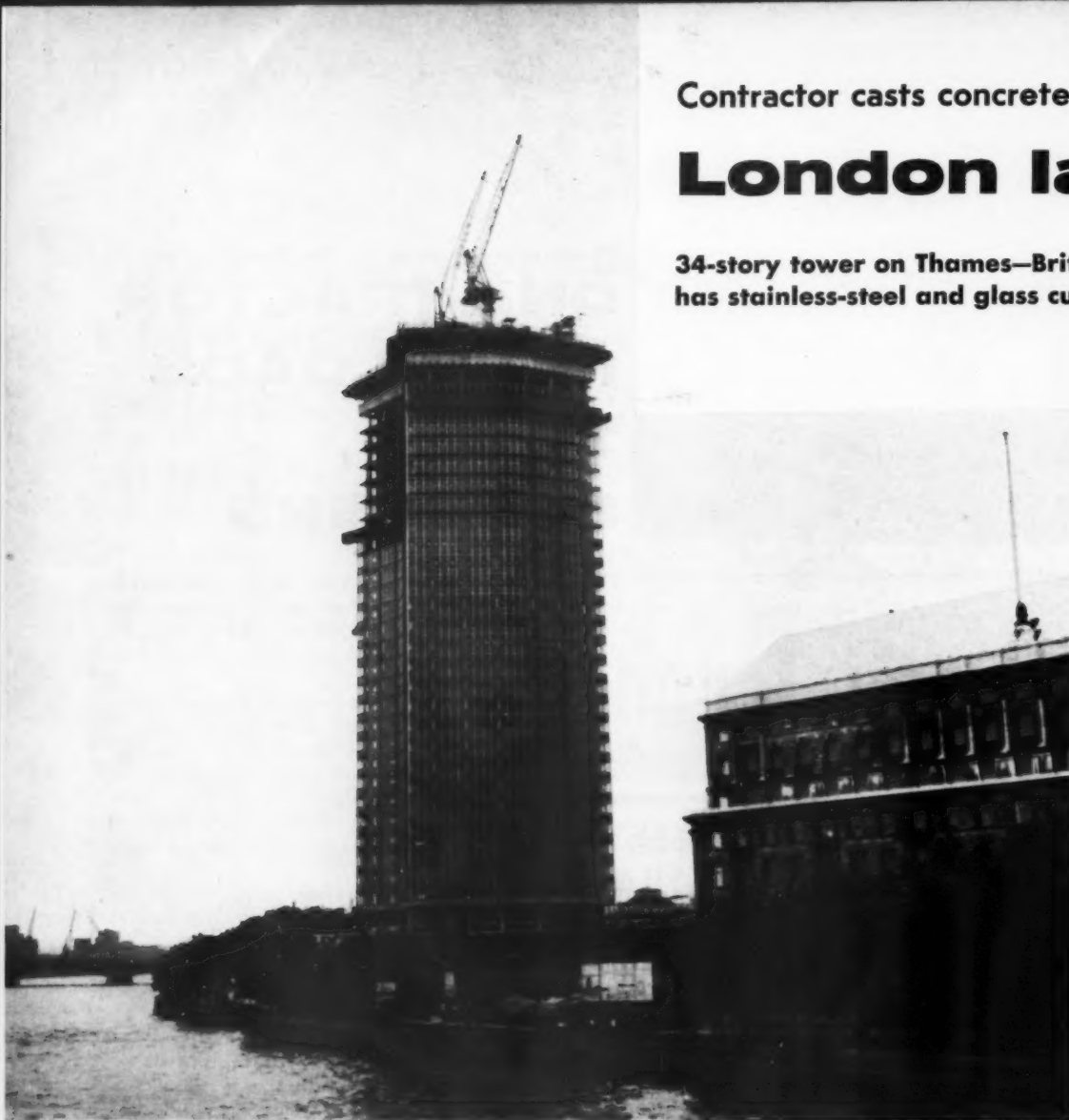
34-story tower on Thames—Britain's tallest—has stainless-steel and glass curtain walls

by WILLIAM H. QUIRK, editor

London is breaking with tradition. Building in the British capital no longer is confined to 10 or 12-story structures. New buildings going up, particularly along the Thames River, are now even regarded as a "city" development. Tallest of these is the new tower block of the Millbank development, a 34-story office building, whose roof is 387 feet above pavement level. This building height is exceeded in Europe only by that of a structure in Milan, Italy.

Popularly styled the Vickers Tower after the big industrial firm for which it is being erected, the tower has reinforced-concrete framework enclosed by stainless-steel and glass curtain walls. It rests on 163 reinforced-concrete 3-foot-diameter piles bored to a 90-foot average depth in the ground. An 11-foot-thick mat of heavily reinforced concrete caps the piles.

In cross section, the building has the shape of a rectangular sponge that has been squeezed in the middle, causing the ends to bow out. This gives the ends a convex, and the sides a concave, appearance. Architects



England's tallest—the 34-story Vickers Tower—rises 337 feet above pavement level along the bank of the Thames River in London. Thames House is at the right, with the Vauxhall Bridge in the background.



A Liebherr tower crane swings an Abelson bucket of concrete from the mixing plant to the rising 8-story, Y-shaped building adjoining the tower.



Keeping pace with the rise of the tower is the contractor's scaffolding that supports material and personnel hoists being used on the project.

CONTRACTORS AND ENGINEERS

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ally, the outline is an octahedron, with eight distinct 51-foot sides insuring a maximum of natural lighting throughout the interior. Exterior concrete columns are on 17-foot centers, with the curtain-wall units manufactured to a 4-foot 3-inch module width. The units are story height, 10-foot 9-inch. Floor-to-ceiling height is 9 feet. Work on the building started in June, 1959, and is scheduled for completion in the fall of 1962.

On Crown land

Fronting on Millbank along the Thames River between Lambeth Bridge and Vauxhall Bridge, the Millbank development is on a 3½-acre site owned by the Crown. In addition to the tower block, the project includes an adjoining conference hall, an adjacent 8-story Y-shaped office building, a 12-story apartment building, a 3-tier car park with circular ramp, and a low-level podium or arcade linking the high tower with the Y-block office building. A 3½:1 plot ratio of ground to building permits the establishment of gardens and open courtyards on the unoccupied portions of the site.

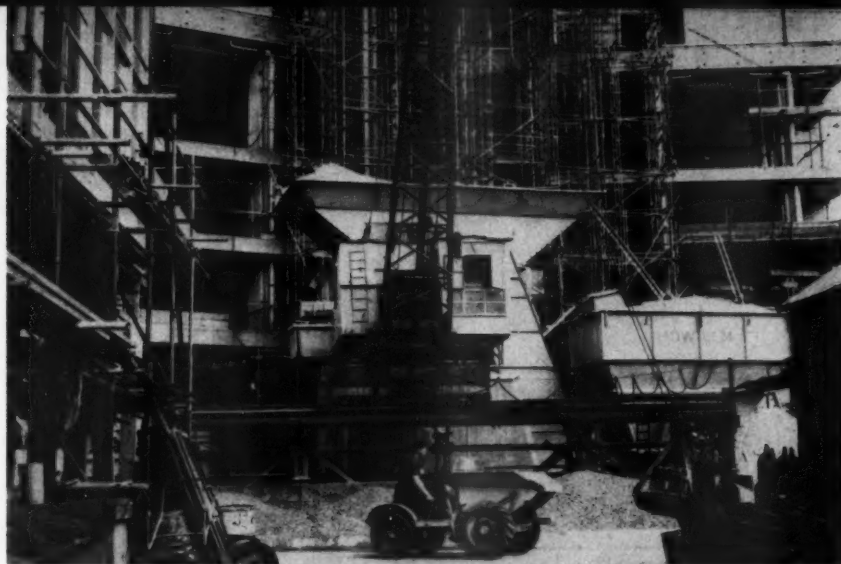
The Legal & General Assurance Society, Ltd., is financing what Vickers, Ltd., has commissioned to build. Ronald Ward and Partners are the architects; G. W. Kirkland, the consulting engineer; John Mowlem & Co., Ltd., is the general contractor. All principals are located in London.

The development will provide some 445,000 square feet of floor area, with the tower block and conference hall accounting for 275,000 square feet; the Y-block and podium for 120,000 square feet; and the remaining 50,000 square feet making up the 80 apartments and 10 hotel rooms in the 12-story block of flats. The service hotel suites are on the first floor, with the one and two-bedroom apartments on the upper floors. The entire development is air-conditioned. Personnel working in the Millbank development may rent apartments in the nearby block of flats.


Pile foundation

When John Mowlem moved in to clear the site, this veteran contracting company had to demolish several 4-story buildings that it had built itself more than 100 years ago. After razing these to the ground and digging out their foundations, the contractor plunged into the pile phase of the project. Because of the high water table along this left bank of the Thames, Mowlem drove a sheet-pile cofferdam around the tower site; this remains permanently. Then, employing a pair of Calwell drills, he bored into the clay strata 3-foot-diameter shafts for the 163 foundation piles. As the job progressed, the available working area became limited, leaving room for but a single drill to finish the boring.

(Continued on next page)



The on-site batching and mixing plant is serviced by a crane riding an elevated track. Concrete is discharged either into buckets or motor buggies.



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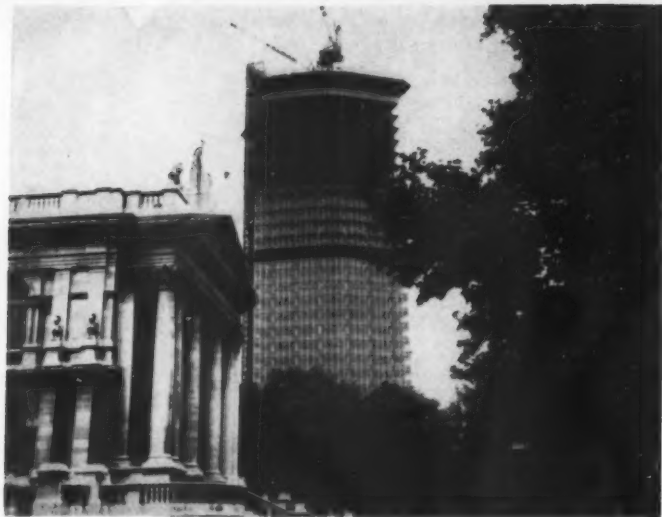
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Holes were drilled on 8-foot centers and excavated to an average depth of 90 feet. Steel tubes as a shaft lining were inserted part way as a water cutoff. Reinforcing cages were next dropped into the holes. They were then filled with concrete, and the steel tubes were removed.

All concrete is supplied by an on-site batching and mixing plant set up immediately behind the tower block. Aggregate is moved from stockpiles to bins by a Smith-Rodley

Old and new. The dignified Tate Gallery of paintings gets a modern neighbor in the tower being erected with the help of a pair of Liebherr climbing cranes.

(Continued from preceding page)

locomotive-type crane riding an elevated track at the side of the concrete plant. All mixing is done in a Cumflow Liner No. 6 1-yard centrifugal unit, with the concrete being bottom-discharged into Abelson buckets or C. H. Johnson 1½-yard buggies. Ground derricks handled the concrete buckets in pouring the 11-foot reinforced-concrete mat that caps the piles. When the foundation to support the 50,000-ton gross weight was completed, the derricks were moved off the job.

Climbing cranes erect

To build the tower, Mowlem brought in a pair of Liebherr climbing cranes that pulled themselves up, story by story, from positions in the core of the building frame. They are mounted on steel beams that straddle the elevator, or lift, wells. The only times the cranes were forced to suspend operations was when the wind-velocity indicator on top of the tower indicated gusts of 85 mph. These instances were few, since the average wind speed recorded at the site ranged between 10 and 15 mph. Another pair of tower cranes supplied concrete in constructing the apartment building, while a fifth similar rig worked on the arcade structure.

Concrete is placed in plywood forms, except for the floor beams that span between the outer framework and the center core. These members are precast, prestressed concrete, and after being delivered to the site they are lifted into position by the cranes. The mixing plant produced an average of 220 yards of concrete per day, but as the tower went higher, a ¾-yard bucket was substituted for the 1-yard bucket because of the weight involved.

The mix for structural concrete is a 1:2.05 (sand): 3.20 (¾-inch to 3/16-inch aggregate), with an 0.50 water-cement ratio. Sika Plastiment is added, 1 per cent by weight, of the cement. The minimum 28-day cube strength specified was 4,125 psi, while the average strength obtained was 7,550 psi. For the tower block columns, the strength specified was 5,400 psi, while the average 28-day cube strength obtained was 7,400 psi. The project requires 60,000 cubic yards of concrete and 3,200 tons of steel.

Curtain walls

Structural steel is used within the core for the elevator framework. Four Otis local elevators serve floors



A closeup of the No. 6 Cumflow Liner 1-yard centrifugal mixer that develops the high-strength concrete being used for the Millbank project.

CONTRACTORS AND ENGINEERS



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1 to 15, while five serve the floors above on an express basis and at a speed of 800 fpm. A goods and fireman's elevator, adjoining the main staircase, also serves each floor. The three top floors and the basement contain the elevator equipment, heating and air-conditioning units, water storage tanks, and electrical substation. A sightseeing platform is on the 31st floor.

Curtain walls are of stainless steel with fixed double windows and venetian blinds. The inner windows may be opened for cleaning. Spandrel panels are cast glass with colored metal backing. Foamed concrete blocks, 4 inches thick, serve as backup walls. The external face of the building will be cleaned by an Escaler unit housed on the 32nd floor. It will run up and down the building on bronze cradle guides fixed to the external face of every fourth curtain-wall mullion, where the building columns are located.

The interior finish of the office building consists of linoleum and rubber-tile floors on screed and mineral-wool quilt. Hung ceilings are of demountable acoustic tile with recessed fluorescent lights. Walls are plastered, while the interior partitions are movable panels made of steel and plastic. The plastic comes in a variety of colors for selection by the tenant.

High-rise problem

In this first and tallest of "high-rise" buildings in London, the main problem faced by the contractor was getting materials and men up to their work. As the structure rose, he erected scaffolding for two hoists at the rear of the tower. One accommodated 20 men and the other 15. In addition, he had the interior goods, or fireman's, hoist, but even so the hoists were operating constantly to move men about vertically in order to maintain progress on the various floor levels.

At the peak of operations, some 400 men were employed on the project. They work from 7:30 a.m. to 6:30 p.m., with an hour for lunch, and with tea breaks at 10 a.m. and 4 p.m. While the work week is six days, most of the crews shut down on Saturday afternoons, mainly to avoid going into a higher tax bracket.

R. W. Redbond is Clerk of the Works for the architect. D. M. Fountain is directing operations for the contractor, with H. P. Ames, Site Agent, and Joseph Oliver, superintendent. John Kirkland is concrete technician.

THE END

Master Builders names

Bruce R. Wellek is the new assistant director, advertising and public relations, for The Master Builders Co., division of American-Marietta Co., Cleveland, Ohio. He will work with the preparation of technical literature for the firm, which produces admixtures for concrete and mortar.

Wellek has been a technical writer for the Portland Cement Association for the past five years.

Another pair of tower cranes handle materials at the Millbank development that includes a 12-story apartment building, right, and arcade, center. Tower is to left (not shown).



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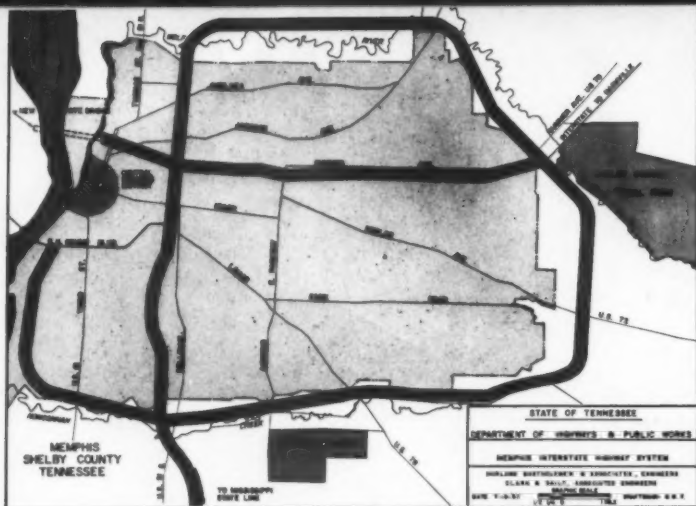


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Some 67 miles of 4 and 6-lane divided highway are being constructed for the Memphis Expressway system, which will carry traffic through and around the city. Present work is concentrated on the southeast section of the circumferential route and the southern end of the north-south route. The system is scheduled for completion by 1972.



One of the contractors presently at work, Oman Construction Co., Nashville, has a contract that includes 11 prestressed-girder bridges, four steel I-beam bridges, and two voided-slab bridges. The deck of a prestressed-girder span is being formed here with a money-saving system involving wood shoring that allows forms and shores to be re-used without recutting.



The plywood deck is supported, from the bottom up, by double 2 x 6's resting on the flange of a girder at 5-foot centers; wedges and blocks; two 2 x 6 purlins running parallel to the center line of the bridge; and 2 x 6 joists at 1-foot centers.

Progress of

All phases of construction are in high gear, and all types of equipment are at work along a 20-mile section of the Memphis Expressway system.

Scrapers gouge into the moist earth. Trucks trundle in loads of a specially prepared base material. Cranes swing heavy prestressed girders to the pier tops. The skips of pavers arch into the air, signaling the steady flow of concrete.

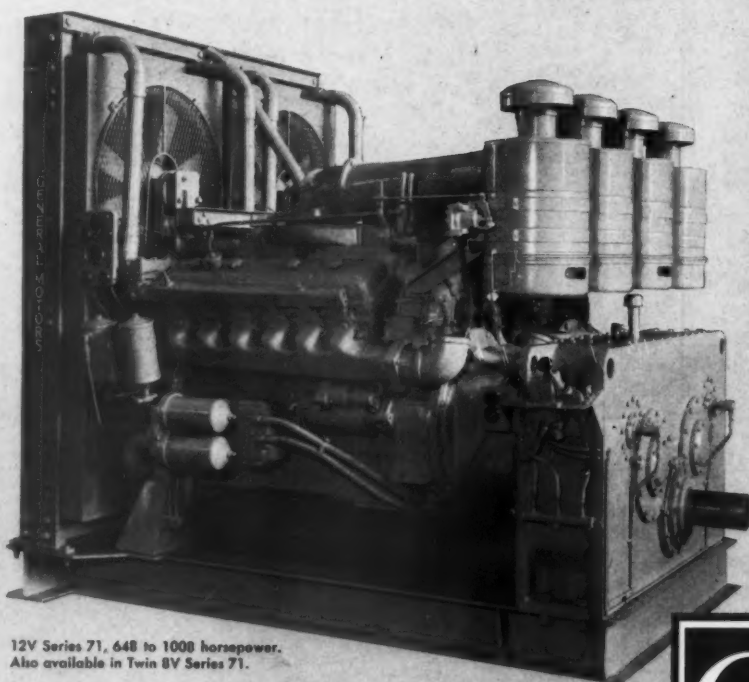
Since the start of construction in

September of 1958, over \$25 million worth of work has been put under contract. Some 25 major structures have already been completed, and 3.4 miles of 4-lane divided highway has been paved. As the remaining sections shape up for an early paving, new sections are being put under contract.

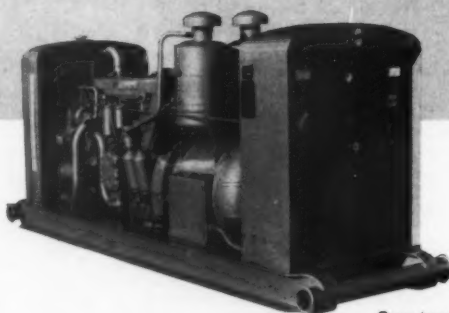
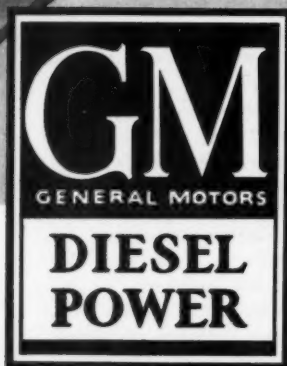
An integral part of the Interstate System, the plan provides for 67 miles of 4 and 6-lane divided highway through and around the city of Mem-

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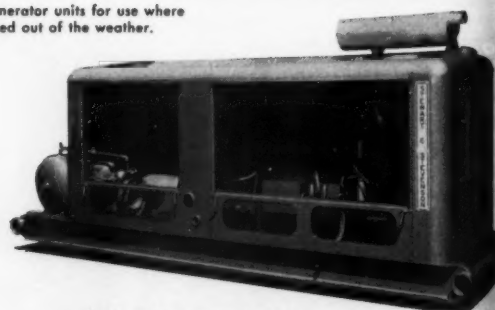
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CONTRACTORS AND ENGINEERS

Memphis Expressway

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phis. Construction cost of the entire system is estimated at \$111 million, the right-of-way at \$51.6 million.

The highway plan consists of a circumferential route combined with an east-west and a north-south route that carry traffic through the downtown area. The circumferential route connects with the only existing bridge across the Mississippi River in Tennessee. A new bridge will be built across the river to tie in with the east-west expressway.

Construction schedule

At the present time, the construction work is going on along the south-east section of the circumferential route and the southern end of the north-south route. The six miles at the south end are expected to be completed this year. The 14-mile stretch of the circumferential route will be ready for traffic early in 1963. Grading will soon start on the 6-mile segment leading to the Memphis-Arkansas bridge. The entire expressway

system is scheduled for completion by 1972.

Designers have been at work since 1955 on the plans for the complex system. Under an agreement with the Tennessee Department of Highways and Public Works, Harland Bartholomew & Associates, Memphis, is handling all the design work. Assisting Bartholomew is the engineering firm of Clark, Dally, & Dietz of Urbana, Ill. The two firms have done everything from convincing the citizens

they need the expressways to drawing up the final plans. After the plans have been drawn up, however, the state highway department takes over, awards the contracts, and supervises construction.

Many contractors have been at work on separate segments of the route. Among them are S & W Construction Co., L & M Construction Co., J. B. Michael Co., J. W. Owens Co., H. N. Rogers & Sons, J. M. Humphries Co., Weymouth Construction Co., Oman Construction Co., Inc., and King-Bee Construction Co. All firms are from Memphis except Oman, which is out of Nashville.

The contractors are faced with building many different types of structures. The design of each is dictated by economy and the particular conditions existing at the crossing. In the present construction, prestressed-concrete-girder bridges are predominant. Other types of bridges include box-girder, rolled I-beam, and voided-slab. The piers are supported by precast or poured-in-place piles.

Calcium chloride in base

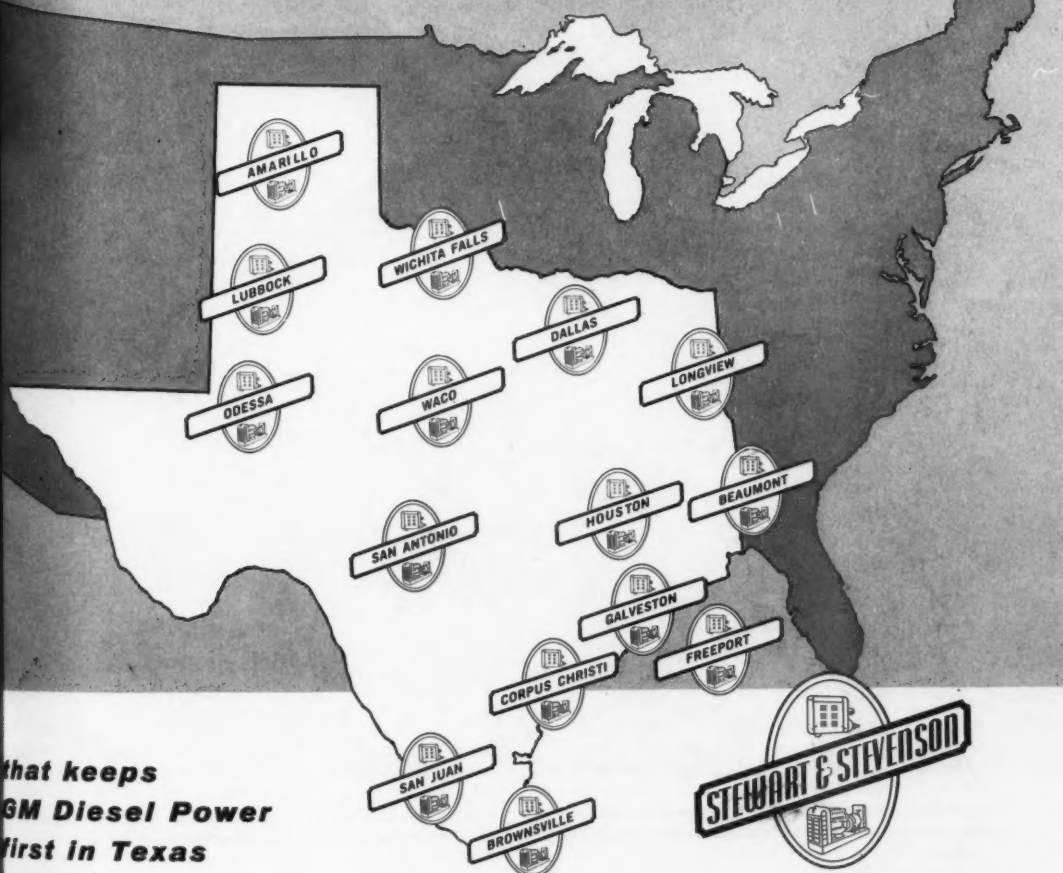
In the pavement design, 10 inches of nonreinforced concrete rests on an 8-inch base-course material. The lower 7 inches is a calcium-chloride-stabilizer base. The top 1 inch is a leveling course of sand.

Contractors are required to mix the calcium chloride in a pugmill with the specified proportions of gravel, sand, and clay. Five pounds of calcium chloride is mixed with 2,000 pounds of base material.

The mixed material is carried from the pugmill to the grade by dump trucks. It is placed in two equal lifts by a Jersey spreader. Pneumatic rollers compact the material to 100 per cent density.

One of the larger contracts going full blast this summer is that held by Oman Construction Co., Inc., Nashville, Tenn. The \$5½ million contract includes the grading and structures along a 5-mile stretch of the circumferential route. Oman's forces are building the 17 bridges on the contract. King-Bee Construction

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Another bridge under construction uses a similar forming method, but the double 2 x 6 on the flanges of the girders is not truly double. Cleats nailed to each end give it stability; the diaphragm form in the background is hung from a double 2 x 6 resting on the flanges of the beams. Corners of the double 2 x 6 are cut to fit the shape of the flange.



(Continued from preceding page)

Co. is subcontracting the 2 million yards of dirt.

Most of the bridges on Oman's contract are a part of an elaborate interchange at the intersection of the east-west route with the circumferential route near the eastern city limits. Eleven of the bridges are pre-

stressed-concrete-girder, four are steel-beam, and two are voided-slab.

Deck forming system

In forming the decks of the prestressed-girder bridges, Oman had a system that saved money. The company has found that, when there are many similar structures, the wood shoring system is preferable to steel hangers. The forms and shores can be used many times without recutting.

In the cut area, a Cat 630 is pushed by a D9. The automatic shift on the new scrapers proved advantageous in loading and also in getting off to a fast start.

Architectural awards presented by AISC

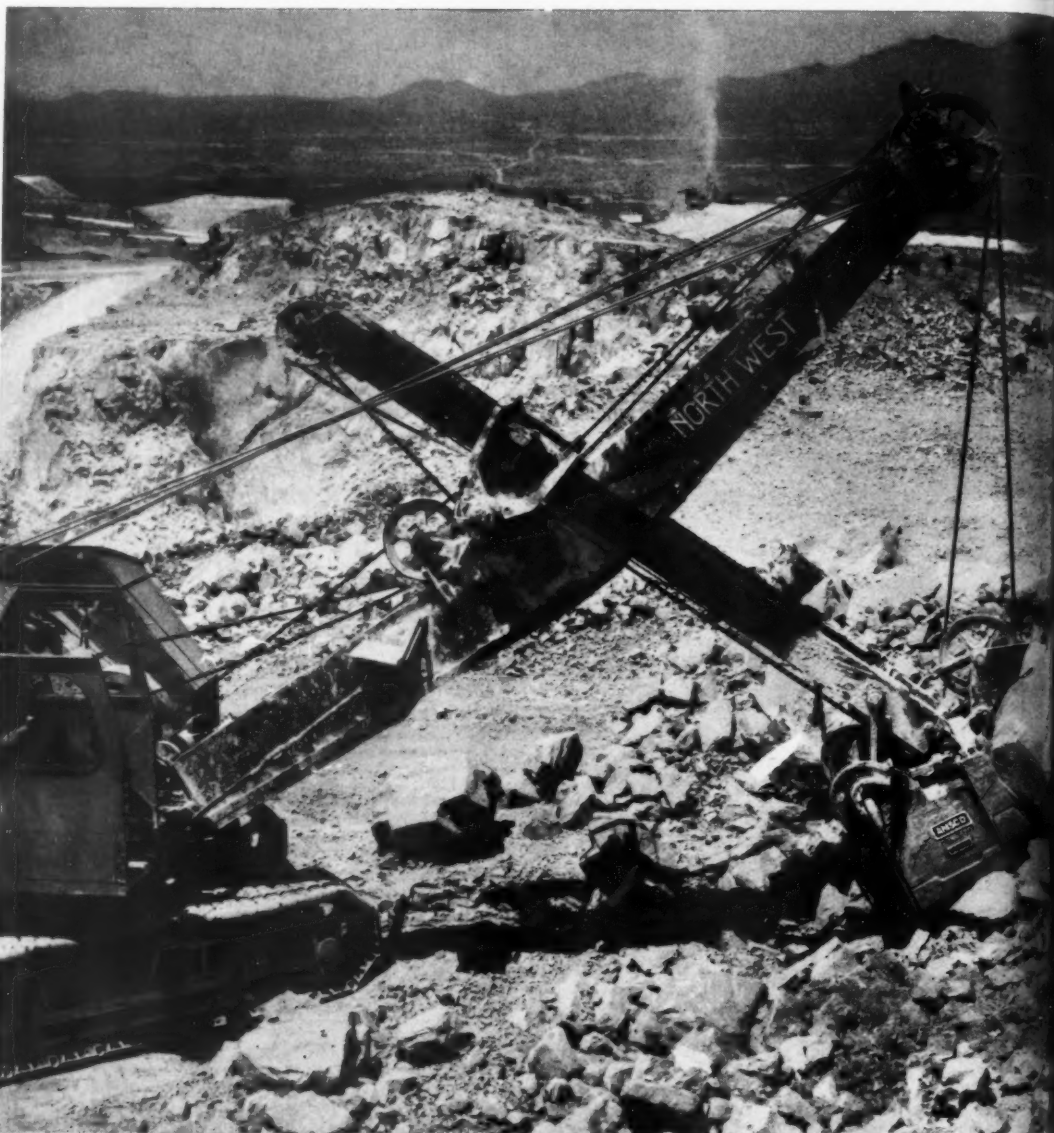
■ Architectural Awards of Excellence have been presented to nine architectural firms in recognition of outstanding designs of nine steel-framed buildings, by the American Institute of Steel Construction.

The winners, who were selected from 61 entries in the second year of the program, are: Welton Becket & Associates, Los Angeles, Calif., for the Bethlehem Steel Co. office building in San Francisco; Bolton & Barnstone, Houston, Texas, for the G. S. Gordon and the J. M. Winterbotham residences in Houston, designed by Howard Barnstone; Dreyfuss & Blackford, Sacramento, Calif., for the Headquarters Building, Sacramento Municipal Utility District, Sacramento; Charles Luckman Associates, Los Angeles, for the John Jay Hopkins Laboratory for Pure and Applied Science, Torrey Pines Mesa, San Diego, Calif.; Paul Hayden Kirk, FAIA, & Associates and Victor Steinbrueck, AIA, Seattle, Wash., for the Faculty Club, University of Washington, Seattle; W. C. Muchow Associates, Denver, Colo., for the First Federal Savings & Loan Association of Denver; Eberle M. Smith Associates, Inc., Detroit, Mich., for Southwestern Community High School, Flint, Mich.; and Tippetts-Abbett-McCarthy-Stratton, with Ives, Turano & Gardner, Associate Architects, New York, N. Y., for the Pan American World Airways Passenger Terminal, New York International Airport, Queens, N. Y.

ASTM makes joint award

■ The American Society for Testing Materials, Philadelphia, Pa., presented the Sanford E. Thompson Award to Leonard Pepper and Bryant Mather at the group's Awards Luncheon, during its 64th annual meeting in Atlantic City, N. J.

Pepper, chief, of the chemistry section, and Mather, chief of the special investigations branch, of the Concrete Division, U. S. Army Engineer Waterways Experiment Station, Jackson, Miss., received the award for their paper on "Effectiveness of Mineral Admixtures in Preventing Excessive Expansion of Concrete Due to Alkali-Aggregate Reaction" presented at the 62nd annual meeting of ASTM, and subsequently published in its "Proceedings," Vol. 59 (1959).



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lips, fronts and doors, racks, bevel gears, crawler shoes sheaves, sprockets, idlers, shipper shaft pinions.

Amsco manganese steel, "The toughest steel known," is used in this gyratory crusher mantle and concaves. In some cases, new Amsco manganese moly alloys can result in more time between crusher shut-downs. Ask your manufacturer about these special alloys.



Another contractor, King-Bee Construction, Memphis, uses six new Cat 630 scrapers to finish grading on its contract. This one, hauling at 41 mph, carries 35 yards heaped.

In the forming system, double 2 x 6's at 5-foot centers rest on the lower flanges of the concrete girders. The corners of the 2 x 6's are cut to fit the shape of the girder. The 1-inch spacers are nailed between the 2 x 6's. Rising from each double 2 x 6 are two double 2 x 6 legs. These carry double 2 x 6 purlins (parallel to the girders) to support 2 x 6 joists on 1-foot centers. Then 3/4-inch plywood is nailed to the joists. On smaller spans, single mem-

bers are substituted for the double 2 x 6's.

New scrapers tackle dirt

On the dirt work, the scrapers of King-Bee Construction have been steadily moving the loess material (a fine sandy silt) from one end of the job to the other. Most of the material has to be hauled about four miles from the south to the north end of the contract.

At the start of this construction



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look to AMSCO for the answer

Building wear resistant parts for your machinery can be handled in one of two ways.

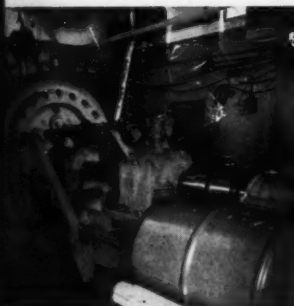
First, parts can be "beefed up" to make them heavier and larger.

Second, superior metallurgy can be applied to make parts tougher and stronger without increasing weight.

A "beefed up" part will probably last longer simply because there is more metal to wear away. But, consider a jaw crusher. Heavier, larger parts impose strains that bearings and framing members were not designed to take. A heavier jaw means a restricted opening that actually cuts production.

Amsco works with original equipment builders to design parts that make the entire machine operate as it was designed to do. In addition to manganese steel (12-14% manganese), special alloys have been developed to meet your specific needs, such as, chrome-moly steels, multiple alloy engineering steels and high chromium and nickel iron.

Your nearby Amsco representative or your equipment dealer will analyze your operation and recommend an Amsco alloy product that will produce or move material at the lowest operating cost per ton. Amsco products pay for themselves through reductions in replacement and maintenance.



Amsco dredge pumps aren't "sold off the shelf." Each one is custom engineered to a specific application to make certain it will give the longest, most trouble-free life for the conditions it will encounter. Dredge pump accessories include swing sheaves, cutterheads, flap valves, elbows, hose nipples and hand hole nipples for every condition of impact and abrasion.



Simplex* two-part reversible dipper teeth stay sharp after competitive teeth have worn out completely. Reversing for extra life takes only a few minutes. Simplex design plus a new dipper tooth alloy is saving dipper tooth replacement costs wherever shovels are used. Try replacing half your dipper teeth with Simplex and measure the difference under your own job conditions.



Fast build-up, repair and hardfacing are features of Amsco electrodes and weldments. Send for your sample kit containing our famous "Pair for Wear"—Nicro Mang* for all manganese welding or replacing a buttering pass of stainless when welding manganese steel to carbon steel and X-53 for all-purpose hardfacing. These two rods handle 90% of build-up and hardfacing jobs.

*TRADEMARK REGISTERED



They're backed by experience...

Other plants in:
 Denver • Los Angeles • New Castle, Delaware
 Oakland, California • St. Louis
 IN CANADA: Joliette Steel and Manitoba Steel
 Foundry Divisions
 IN MEXICO: Amsco Mexicana, S.A.
 Welding products distributed in Canada by
 Canadian Liquid Air Co., Ltd.

AMSCO
 AMERICAN MANGANESE STEEL DIVISION
 CHICAGO HEIGHTS, ILLINOIS

season, the company bought six high-speed high-capacity scrapers to handle the bulk of the earthmoving. The Caterpillar 630 rigs barrel down the haul road at speeds of 41 mph, carrying 35 yards of dirt. Equipped with an automatic shift, the 3-axle scrapers get off to a fast start from the loading point. The scrapers are push-loaded by an Allis-Chalmers HD-21 and a D9 working in tandem. On the 4-mile haul, the six scrapers have been moving about 5,000 yards of dirt in a 10-hour shift.

After the scrapers dump their loads, the material is spread by a D7 and a D8 dozer. A sheepfoot roller compacts the fill to 100 per cent density.

THE END

AASHO electronics group plans highway conference

■ A "Regional Conference on Improved Highway Engineering Productivity," to be held August 24-25 at the Somerset Hotel, Boston, Mass., will be jointly sponsored by the American Association of State Highway Officials, the Bureau of Public Roads, the Massachusetts Department of Public Works, and engineering schools in the metropolitan Boston area.

The meeting is under the general direction of Everett S. Preston, chairman of the AASHO Electronics Committee, and H. A. Radzikowski, its secretary. Preston is Ohio director of highways, and Radzikowski is BPR chief, Division of Development, Office of Operations.

Improved highway techniques will be explored in workshop sessions. A panel of communication experts will discuss developments in that field. Representatives of industry will demonstrate advancements in electronic equipment. And new electronic methods will be studied.

All state highway departments have been asked to send representatives to the meeting, which will also be open to the highway industry and the press.

White Construction moves headquarters

■ The White Construction Co., Inc., New York, N. Y., has moved to new offices at 305 E. 45th St., New York 17, N. Y. The organization's offices were formerly at 95 Madison Ave.

For more facts, use Request Card at page 18 and circle No. 258

Extension work on the main runway at Minneapolis-St. Paul International Airport is being handled by big Allis-Chalmers scrapers. The runway is being extended to 10,000 feet for jet traffic. Kimmes-Bartelma Construction Co., Hastings, Minn., subcontracted the earthmoving work.



Earthmovers race time on runway-extension job



172 CU. IN. 4-CYL.

Built to handle any job in the 172-, 220- or 330-cu. in. range!



330 CU. IN. 6-CYL. POWER UNIT

DEPENDABLE FORD DIESELS... truly modern... truly economical!

All three highly efficient and economical Ford Diesels—the 172-, 220- and 330-cubic-inch model—offer such advanced features as:

COMPACT DESIGN . . . Ford Diesels develop more horsepower per pound of engine weight than ever before possible!

SUSTAINED HIGH TORQUE . . . necessary for "hanging onto" heavy loads without stalling.

SUPERIOR STARTING . . . all Ford Diesels offer a 12-volt electrical system for faster starting.

GREATER ECONOMY . . . such features as Free-Turn overhead valves and replaceable cylinder sleeves reduce maintenance and downtime, increase engine life and provide easier servicing.

PARTS AND SERVICE . . . high quality, low-priced Ford parts are as near as your Ford Dealer, for service when you need it!

For peak performance all the time, and the minimum in downtime, call or write us today. We'll be happy to help you select the right power for your job!

ENGINE SERIES		172 FOUR DIESEL	220 FOUR DIESEL	330 SIX DIESEL
Basic Model		DD	X	Y
Type		4-Cyl. O.H. Valve	4-Cyl. Diesel	6-Cyl. Diesel
Bore and Stroke—Inches		3.9 x 3.6	3.94 x 4.52	3.94 x 4.52
Displacement—Cubic Inches		172	220	330
Brake Horsepower	Dynamometer	59 @ 2400	62 @ 2400	99 @ 2400
	80% Dyn. BHP	47 @ 2400	49 @ 2400	79 @ 2400
Torque	Dynamometer	140# @ 1200	151# @ 1600	236# @ 1600
	80% Dyn. BHP	112# @ 1200	121# @ 1600	189# @ 1600
Compression Ratio		16.8 to 1	16 to 1	16 to 1

YOUR JOB IS WELL-POWERED WHEN IT'S FORD POWERED!



INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 135, DEARBORN, MICH.

West of Rockies write to:

FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.

FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

More than 800,000 cubic yards of sandy Minnesota loam was peeled, placed, and packed by big earthmovers to add 3,500 feet to the main northwest-southeast runway of Wold-Chamberlain field at the Minneapolis-St. Paul International Airport. The entire \$1,958,158 project, due for completion in October, will extend the runway to 10,000 feet for jet air-line traffic.

In addition to moving the 800,000 yards of dirt, it was necessary to excavate a shelf of 48,000 yards of rock, and each layer of dirt filled on the main traffic runway had to be compacted to not less than 95 per cent of maximum density. All dirt was scheduled to be moved and the fill compacted within 45 days.

To complete the job in the allotted time, a fleet of Allis-Chalmers motor scrapers and crawler tractors, handled by veteran operators, worked a 10-hour day, six days a week.

While work was in progress, earth fill for the runway and taxi strips either had to be wet down or dried out to secure a uniform moisture content. A base of gravel 8 inches in depth was then laid and compacted to 100 per cent density. With normal weather conditions, it was expected that the selective filling, rock ripping, backfilling, grading, and compaction work would be finished on schedule.

Some 136,000 square yards of concrete will be laid in 25-foot-wide ribbons of pavement from 9 to 12 inches thick.

The prime contractor for the runway project is S. J. Groves & Sons Co., Minneapolis. Kimmes-Bartelma Construction Co., Hastings, Minn., handled all the runway earthmoving work under subcontract from Groves.

All work at the airport is under the direction of the Minneapolis-St. Paul Metropolitan Airport Commission. Toltz, King, Duvall, Anderson & Associates are the engineers and architects.

British firm to produce Rockwell-Standard axles

Rockwell-Standard Corp., Coropis, Pa., has made an agreement with Centrax Ltd., Newton Abbot, Devonshire, England, which provides for manufacture and sale of Rockwell-Standard planetary axles in Great Britain.

CONTRACTORS AND ENGINEERS

For more facts, use Request Card at page 18 and circle No. 259

Coming Next Month

CONTRACTORS and ENGINEERS

MAGAZINE OF MODERN CONSTRUCTION

Completion of 250 feet of 17-foot-high wall for a vehicular tunnel in a 5-day week is high production, and a Memphis construction company shows how it attained that goal by handling 22 x 17-foot forming as a unit, so that forming and stripping time was reduced for center, side, and ventilation walls.

Big new dredges—as many as eleven working at one time along the length of a new channel—have put the New Orleans' outlet channel to the Gulf a year ahead of schedule. How the work is being done with a daily production of 300,000 yards is the subject of this special on-the-scene report.

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(Please Print)

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☐ Materials Producer
☐ Equip. Distrib. or Supplier
☐ Government Dept.
☐ Consulting Engineer
☐ Other _____

Coming Next Month

CONTRACTORS and ENGINEERS

MAGAZINE OF MODERN CONSTRUCTION

One of the most controversial subjects for highway men at the present time is the method of placing aggregate base for highways. New specifications have required changes in handling this job in California, and C&E will have a story on the new methods—and on contractors' reactions to them.

Want the latest information on what's new in construction legislation? ... in labor matters? ... legal decisions affecting construction? These areas are explored every month in Surveying Washington, Labor Review, and Avoid Legal Pitfalls, three of the many regular departments in these pages.

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Your Name _____ Title _____
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<input type="checkbox"/> Materials Producer	<input type="checkbox"/> Consulting Engineer
<input type="checkbox"/> Equip. Distrib. or Supplier	<input type="checkbox"/> Other _____

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READER SERVICE

Labor Review

Operating engineers and strike against D.C. area contractors

Operating engineers in Washington, D. C., called off their strike against members of the Construction Contractors Council for a 2-year agreement that increases wage rates in the area 10 cents this year and 5 to 20 cents more in 1962.

The 20-cent raise next year will go to men in the top classifications, or about 15 per cent of the union's membership. Men in intermediate classifications get a total 15-cent raise, which is in line with earlier settlements by the carpenters and laborers, while apprentice engineers get only the initial raise of 10 cents an hour.

Employers will continue to pay 12½ cents for health and welfare, and 8 cents for pensions. In addition, beginning May 1, 1962, contractors will pay 5 cents per hour for each hour worked by apprentice engineers to a new Apprenticeship Training Fund.

Although general increases for the bulk of the union membership follow the carpenter pattern, the operating engineers' agreement makes no concessions for speculative or highway work in outlying areas. Carpenters agreed to a 50-cent differential for speculative housing work and a 45-cent differential for highway work in Maryland and Virginia counties surrounding the District of Columbia.

Three-year settlements made by most Cincinnati building tradesmen

Wage rates and working conditions for most of Cincinnati's building tradesmen are set for the next 3 years under agreements settled recently. Two crafts, however, have joined with their employers in submitting contract differences to national arbitration panels, while two others—the cement masons and the millwrights—have struck to enforce their wage demands.

This year's settlements in the area call for increases ranging from 32½ to 40 cents an hour over the 3-year period. The ironworkers are an exception, with a new 2-year agreement that provides a 7½-cent increase in hourly rates effective June 17, another 7½-cent increase on January 1, 1962, and a final 15 cents on June 1, 1962. Employers now pay \$4.02½ an hour, plus 10 cents for welfare and ½ cent for apprenticeship and training.

The bricklayers' new 3-year agreement also calls for an initial 10-cent raise in hourly rates. A 12½-cent increase is due June 1, 1962, and another 12½ cents is payable a year later. Journeyman rate now is \$4.12½, plus 10 cents for welfare. Under the carpenters' agreement, the journeyman scale is raised from \$3.90 to \$3.95 this month; another nickel is due the first of next year; 12½ cents will be added June 1, 1962; and another 12½ cents is scheduled for June 1, 1963.

Costly construction tie-up in Philadelphia area ends; engineers sign new pact

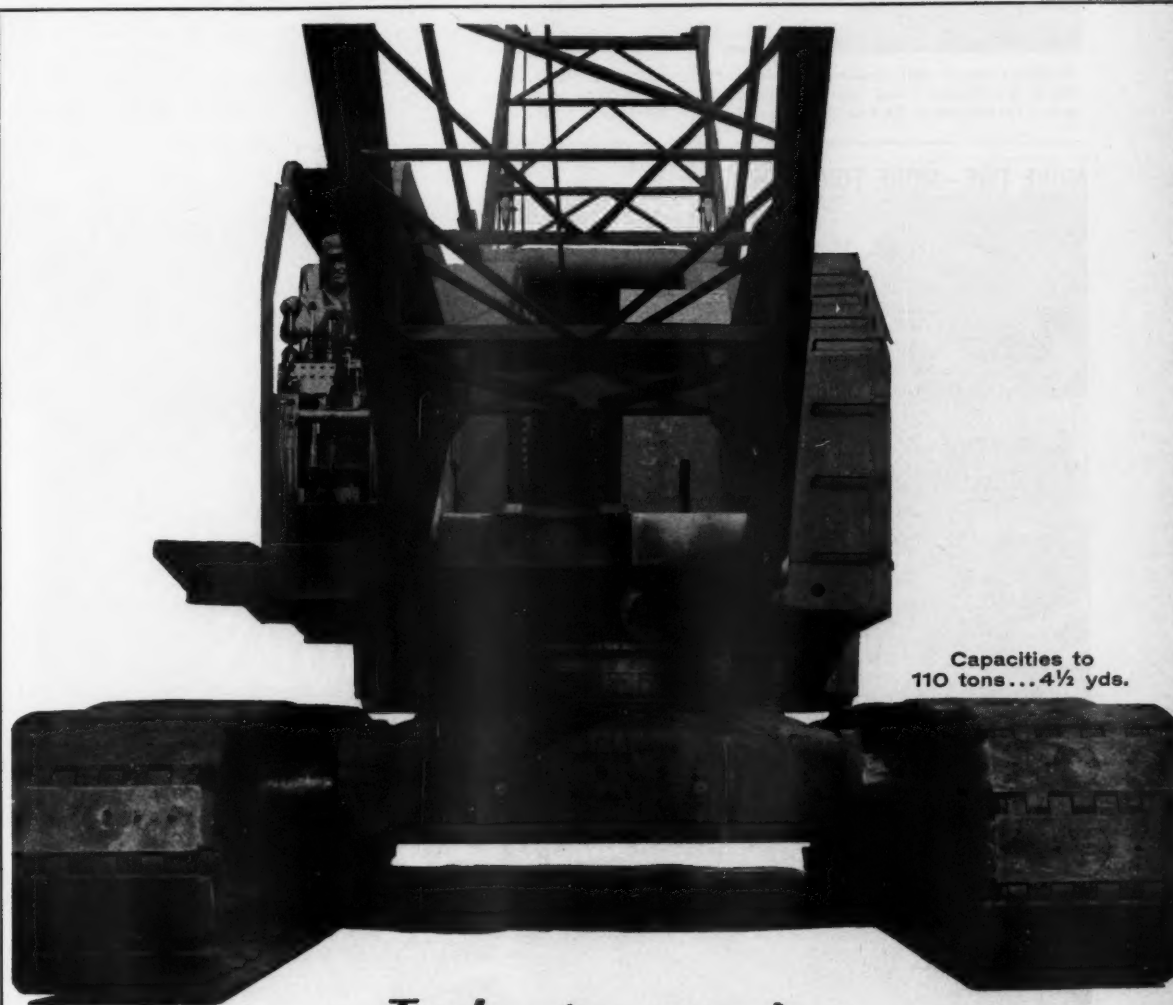
A strike-lockout that tied up an estimated \$400 million worth of work and idled some 10,000 building tradesmen in the Philadelphia area since the first of May is ended. Operating Engineers Local 542 and three area contractor groups settled their differences and signed 2-year contracts

for work in five southeastern Pennsylvania counties.

According to a union spokesman, the new agreements are patterned after settlements reached earlier with McCloskey & Co. and other independent contractors. Wage rates are increased 15 cents each year, and an additional 10 cents is provided for fringes. Effective immediately, employers will contribute an additional

7½ cents to be divided between the existing pension and welfare funds. The remaining 2½ cents is payable next year.

Employers were represented by the General Building Contractors Association of Philadelphia, the Contractors Association of Eastern Pennsylvania, and the Excavating Contractors Association of Pennsylvania.



Capacities to 110 tons... 4½ yds.

Today's most modern crane

It's the all-new 900 Series AMERICAN — the machine that re-wrote the book on what a big-capacity crane *should* be! First, let's make this clear: We're not talking about a warm-over of a previous model. Nor a beefed-up version of a smaller machine. But a *completely new design*, from tracks, to deck, to boom tip. As such, the 900 Series crane gives you every advantage of modern-day engineering — plus operating features not found in any other machine — all in a perfect balance of weight, power, and

high-strength materials. Of course, it's easily converted from crane to backhoe, shovel, dragline or clam.

Performance? Don't take our word for it. Ask 900 Series owners — like *Winston Bros. Co., Dravo Corp., Duval Eng. & Constr. Co., or S. J. Groves & Sons*. Or have a talk with your AMERICAN distributor. Have him show you the differences that *make* this machine the top-performer in its class. Very honestly, we believe it will be well worth your time.

CC-731

EXCAVATORS
½ to 4½ yds.

CRANES
12½ to 110 tons

DERRICKS-HOISTS
to 800 tons

REVOLVER CRANES
to 400 tons

FORGED FITTINGS
FOR WIRE ROPE
AND CHAIN
(Crosby-Laughlin Div.)



AMERICAN HOIST
and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 260



Buildings, roads, and pipelines are now being constructed at the Lemoore, Calif., Naval Air Station. A big help to supers on scattered projects is the clear company policy spelled out in the Field Supervisor's Manual developed by the contractor.

Field personnel learn

right way to handle job details when

Supervisor's manual spells out policies

The Field Supervisor's Manual, which details company policies and administrative procedures, is an invaluable aid to the Baldwin Contracting Co., Inc., Marysville, Calif., in standardizing and controlling its widely varied operations. The 100-

For more facts on insert, use Request Card at page 18 and circle No. 261

page-plus book is supplied to approximately 50 superintendents, project engineers, and foremen.

A much larger and more comprehensive manual of management policies and practices is supplied to a select group of some 20 key management personnel, including project managers of major projects. The larger book contains all the material in the smaller one, plus a large amount of semiconfidential information for key management personnel.

Work covers wide scope

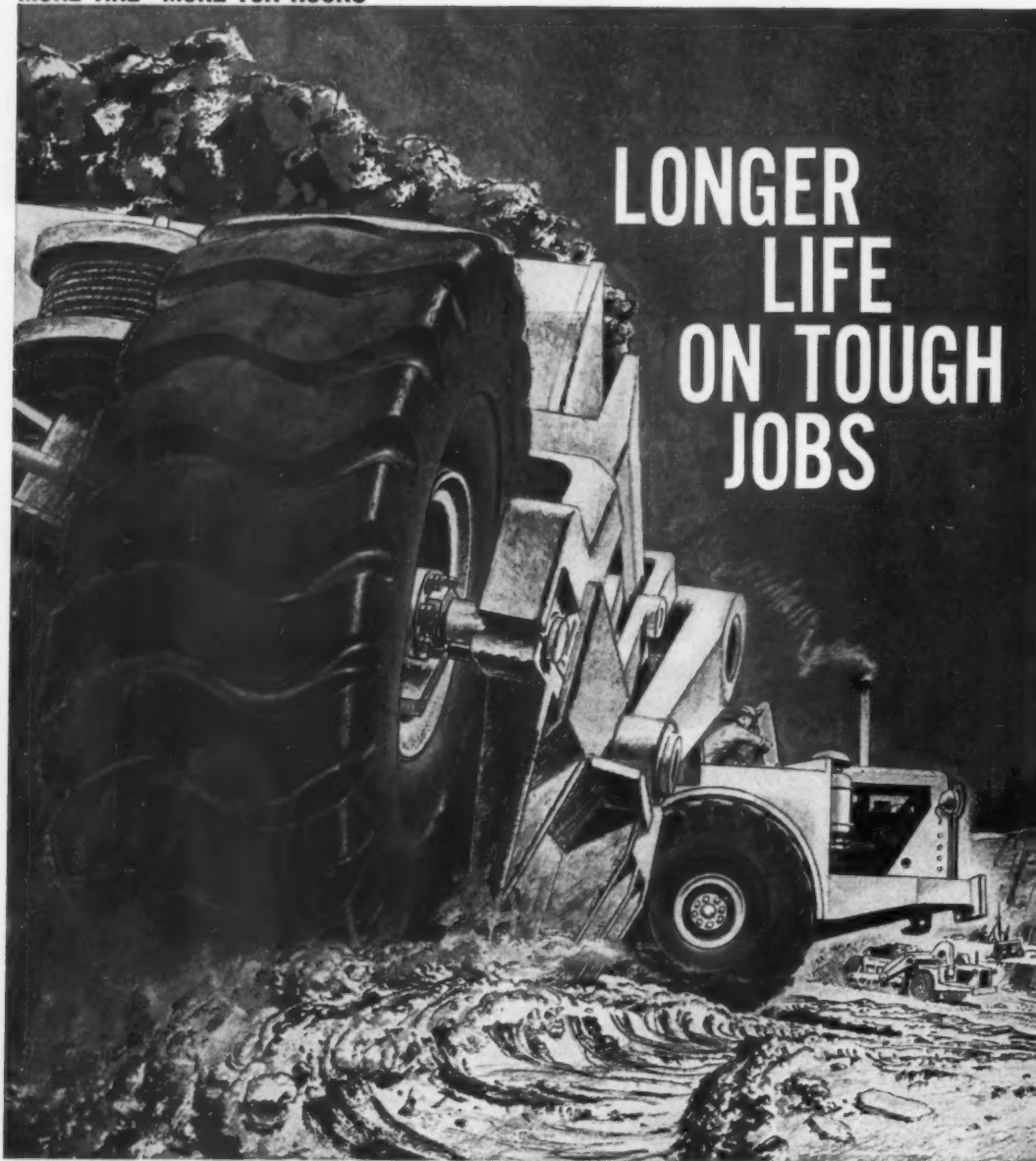
Baldwin's wide variety of projects dictates the necessity for these comprehensive detailed instructions. The company takes on diversified types of work including highway grading, paving, aggregate production, underground utilities, and general building construction. In size, the projects range from a few dollars to the \$10 million class.

The work is split between two major divisions. The construction division handles the highway, utility, general, and building construction. The commercial division produces rock, sand, gravel, ready-mix concrete, asphalt mixes, and aggregates of many kinds. In addition to producing these materials at several major plants, this division sometimes places the materials on a job basis. Jobs, therefore, range from the placing of a few yards of gravel or bituminous mix in a driveway to the construction of a major highway contract or a multimillion-dollar military installation.

All of these jobs must be handled effectively by the same organization. This requires that administrative procedures be carefully spelled out in every detail and that these procedures be applied with rigid uniformity.

Baldwin Contracting accomplishes this in two ways—through the Field

MORE TIRE—MORE TON HOURS



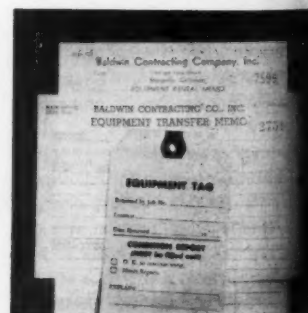
U.S. ROYAL CON-TRAK-TOR—FULL LUG Built burlier to take it under the roughest conditions • Increased resistance to impact and rock penetration • Wide, full-lug tread gives more ground-gripping contact and flotation—resists side slippage and assures more ton hours of service • More durable carcass—more tires retreadable • Prove-test them on your present equipment, specify them for your new machines • Call your U.S. ROYAL DEALER today for sure.

U.S. ROYAL  **TRUCK TIRES**



UNITED STATES RUBBER
Ruckelshaus Center, New York

For more facts, use Request Card at page 18 and circle No. 261



These three forms, reprinted in Baldwin's manual on procedures, are related to equipment. They include a form to record data on equipment rental; a form for recording all information about a rig being moved from one job to another; and a tag attached to any piece of equipment coming into the central shops.

CONTRACTORS AND ENGINEERS

Ask the man who rips the rock...



**the new ESCO ripper point
rips where other points fail!**

This newly-designed Ripper Point
now rips tough material that pre-
viously had to be shot.



ESCO CORPORATION,
PORTLAND, OREGON; DANVILLE, ILLINOIS

See other side for more details ➔

ESCO OFFERS YOU A POINT DESIGN AND ALLOY FOR EVERY DIGGING AND RIPPING CONDITION



RIPPER POINT SELECTION

- 14" for previously unrippable material.
- 15" for major penetration problems.
- 16" for tough production ripping.
- 18" for general ripping.
- 20" for easily ripped material.

AVERAGE RIPPER POINT LIFE IN ON-THE-JOB TESTS

	Job No. 1	Job No. 2	Job No. 3	Job No. 4
ESCO Ripper Points	5½ hours	16 hours	4 hours	56 hours
Other Ripper Points (average)	½ hour	2 hours	1½ hours	8 hours

Longer life, superior penetration, increased production—these are the three features of *ESCO's* new ripper point that mean lower costs for you. You can easily convert all your rippers to *ESCO* points. Ask your local *ESCO* dealer about cast *ESCO* shanks and *ESCO* weld-on nose pieces to convert any shank.

ESCO two-piece teeth, with the widest selection of point shapes in the industry, are tailored to meet your digging requirements. *ESCO* alloy steel is used for high resistance to severe shock and abrasion.

ESCO's wear cap adapter is the most rugged tooth assembly ever developed.

This exclusive *ESCO* combination of the right design, the right alloy, and the right shape makes *ESCO* two-piece teeth right for any digging condition.

Call your nearby *ESCO* dealer today. He's listed in the Yellow Pages. Or write direct to *ESCO*.



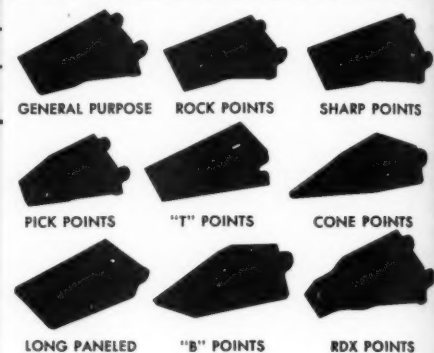
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Offices in Most Principal Cities

ESCO INTERNATIONAL, NEW YORK, N. Y. • IN CANADA, ESCO LIMITED

9 POINT TYPES FOR EVERY DIGGING CONDITION



Supervisor's Manual and the regular Monday morning meeting of the Operations Committee, which consists of the key management personnel directing field operations. These meetings, held each week in the Marysville office, provide the opportunity for open discussion of any questions of company policy or of specific job problems.

Manual answers all questions

This manual leaves practically no guesswork for the field supervisor. Not only are the directions carefully detailed, but they are explained in simple terms so that field personnel can readily understand not only what to do but why to do it.

The manual includes copies of every printed form the field supervisor will need, together with directions for the form's use and explanations of its purpose and necessity. Policies for dealing with employees and with others, such as owners, subcontractors, vendors, etc., are carefully outlined so that the field man can actually represent the company in dealing with these people.

Organization and personnel

The manual is divided into five primary divisions: organization and personnel; general policy; insurance and accidents; accounts; and equipment rental.

The personnel directory lists the name, address, telephone number, and classification of everyone in the company from the president down through foremen. The directory is broken down into the classifications of officers; executive, administrative, and office personnel; supervisory personnel; and local personnel. This section also includes a directory of night telephone connections.

An organization chart in this section clearly shows the delegation of authority and the makeup of the company's divisions. The chart also lists the names of the operations and safety committees.

General policy and instructions

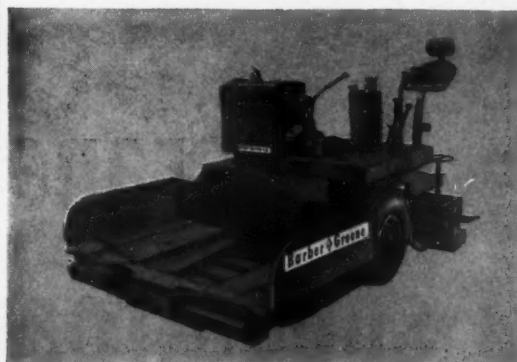
The section on general policy details a multitude of subjects, ranging from the handling of memorandum correspondence to an explanation of the job budget and cost distribution. In this section are sample copies of a number of printed forms, together with full instructions on their use. Baldwin top management believes in putting everything in writing. Memos from the home office to field supervisors are clear and comprehensive. The response is expected to be the same. Everything is set up to make this possible with a minimum of effort.

A typical example is the form for simple handwritten memorandums. The forms are padded in triplicate in three colors. The white copy goes to the person addressed. The yellow copy goes to the home-office job.

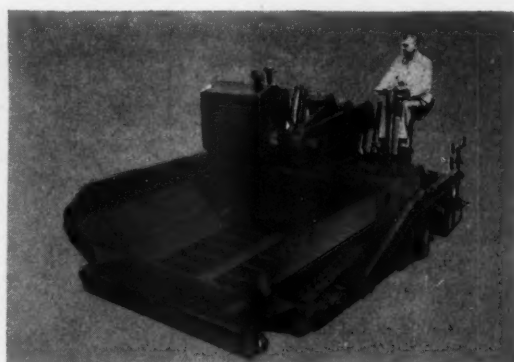
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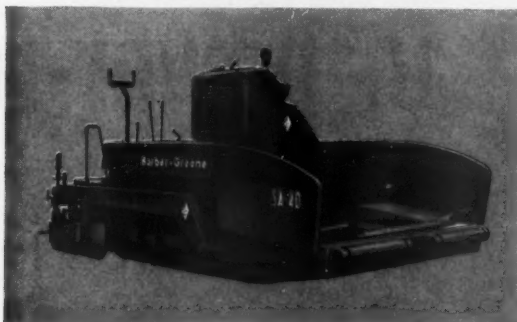
The firm's commercial division produces rock, sand, gravel, concrete, hot-mix, and aggregate. Here, at the home-office location, is the ready-mix plant and, in the background, the Madsen asphalt plant.



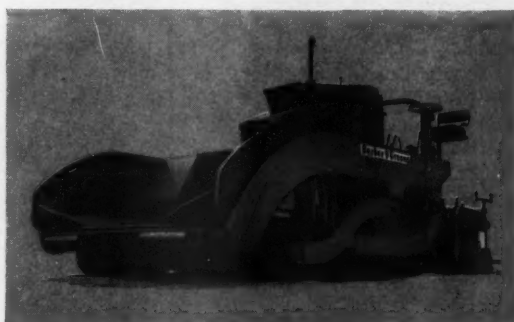
873 FINISHER—Compact, highly mobile for variety of scattered jobs. Paves on crawlers. Travels on rubber.



879-B FINISHER—Economy model in the general duty paving range.



SA-40 FINISHER—New general duty model is big advance in modern asphalt paving equipment.



SA-60 AND SB-60 FINISHERS—Ultimate in heavy-duty, high speed, high capacity, low maintenance asphalt paving. SA-60 is crawler mounted, SB-60 is pneumatic tired.

Barber-Greene's No.1 finisher line offers broadest choice, biggest values

Barber-Greene offers you the world's broadest selection of asphalt finishing machines—three sizes in five models—for most profitable equipment use. In addition, the versatile SJ-50 Road Widener-Shoulder Paver handles both asphalt and concrete with interchangeable attachments.

And here are reasons why each machine tops its class for performance and value:

- Lowest paving cost per ton.
- Greater paving speed.

- Highest quality mat obtainable through tamping-leveling principle with compaction before strike-off.
- Easiest, most positive control.
- Self-cleaning hopper design cuts hand labor.
- Unobstructed visibility to hopper, spreading screws, joints or road edge, and truck.
- Operators' preference boosts productivity.
- Proved ability to lay all types of mix.
- Industry's finest parts and service support.

Get your best deal from the man who sells the most asphalt paving equipment in your area.

World's No. 1 Manufacturer of Asphalt Paving Equipment

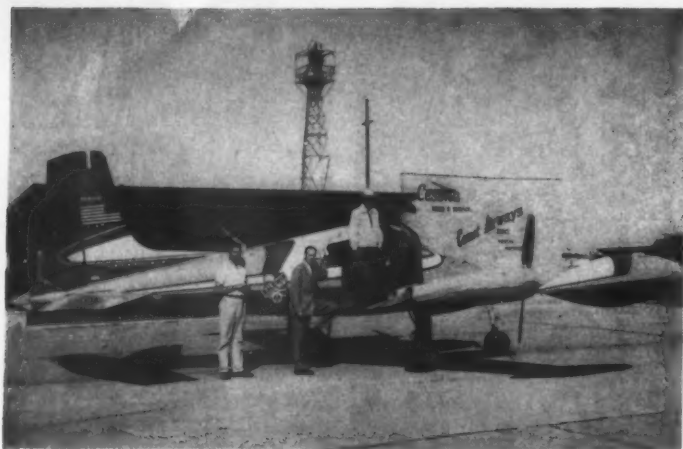
Representatives in Principal Cities of the World

Barber-Greene

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 262



good job management in the hands of all key field supervisors, it is not surprising that Baldwin Contracting jobs always appear to be orderly and well run. There can be little doubt that these guides and instructions pay dividends in efficiency and safety on company projects.

The Baldwin Contracting Co., Inc.,

Company officials save time by using a Cessna to travel around the state from job to job. Standing on the wing is president William H. Baldwin; getting ready to step up is executive vice president and general manager C. C. Baldwin.

was incorporated in California in 1946, and was originally located in Marin County just to the north of San Francisco Bay. In 1955, operations were moved to Marysville to help consolidate aggregate-production operations in that area with highway and other types of construction, which were scattered throughout the state.

The main shops and offices are now located in Marysville, with the major aggregate-production plants located about seven miles away on the Yuba River.

Some of Baldwin's current projects include four large hangars, a number

file. The pink copy is retained in the field job file. If an answer is requested, it is made on the reverse side of the white copy and returned to the sender.

Among the many other forms included and explained in this section are those for field purchasing, time-keeping, back charges, extra work, equipment rental, equipment transfers, equipment maintenance, and daily job reports.

The final page of the section is a check list of the materials and supplies needed by a field supervisor for the proper handling of the job.

Insurance and safety

The third section of the manual covers insurance and accident prevention. All of the company's insurance coverage is carefully explained, and the names of the carriers are listed. There are detailed instructions on how to report accidents and types of claims, together with samples of forms.

Probably one of the outstanding sections of the manual deals with the Safe Practices and Operations Code of the company, including a poster-type safety code called "Teamwork for Safety." Here in simple wording is the essence of a job safety program complete and comprehensive enough to cover practically all field conditions.

Following the detailed code are suggestions and instructions for implementing it and making the safety program work. A check list suggests to the supervisor many of the potential hazards to be considered in planning the job. But, the manual states, "The check list is offered only as a guide—you will use your ingenuity in analyzing situations as they arise and take proper and practical steps to minimize the possibility of accident or injury."

Accounts and equipment rental

The Accounts section of the book gives the field supervisor all the necessary information for properly coding each item of job expense to produce a true record of the job costs.

The final section explains the company policy on the rental of its equipment and includes a detailed schedule of rental rates.

With this comprehensive guide to

For more facts, use Request Card at page 18 and circle No. 263

Payscraper® rigs speed road job in power-robbing Long Island sand!

—for Hendrickson Brothers, Inc., Valley Stream, N.Y.



of other buildings, roads, pipelines, drainage, etc., at the big new Naval Air Station at Lemoore, Calif.; several California highway paving jobs; water lines at Ukiah, Calif.; telephone conduit installation at Richmond, Calif.; utilities for the University of California, Davis Branch; miscellaneous work at Beale Air Force Base; industrial-plant construction for the Aerojet General missile-development program; and site work for housing projects.

The company owns and operates a twin-engine Cessna 310C airplane that is extensively used in checking on jobs.

The top management staff of the Baldwin Contracting Co. includes president William H. Baldwin, executive vice president and general manager Chester C. Baldwin, vice president and manager of highway construction A. N. Regalia, vice president and manager of general construction M. A. Little, secretary-treasurer H. C. Naegeli, commercial division manager Dave Humphrey, purchasing agent Arthur DeLuca, chief estimator Barney C. Trover, assistant manager of general construction Harry Werner, and equipment superintendent George Logan.

THE END

Ohio firm granted patent on framing element

■ Gregory Industries, Inc., Lorain, Ohio, a company formed in 1948 to take over the Nelson Stud Welding business, has been granted a patent by the United States Patent Office on the Nelson Composite Beam, a steel and concrete framing element wherein studs are end-welded on a metal beam or other base and used as shear connectors to cause the beam or other base and the concrete slab to act as a unit.

The beam, developed in the middle '50's to improve the efficiency and

lower the cost of composite steel and concrete bridge and building construction, has been widely used in new structures, and in addition has been adopted as a means of upgrading existing bridges and buildings to meet the heavier loadings imposed by highway traffic and building occupancy today.

Lincoln Foundation appoints secretary

■ Charles G. Herbruck has been appointed secretary of the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio. He has served as assistant secretary of the organization since 1947 and as acting secretary since the death of A. F. Davis, the group's founding secretary.

Hendrickson Brothers, Inc., are prime contractors for 7.41 miles of Sunrise Highway extension, in Suffolk County, Long Island, New York. Much of the 2,100,000 cu. yd. to be moved is dead, "scraper fighting" sand. Hendrickson's count on six International 295 Payscraper rigs to help handle this contract profitably!

"The '295's' are doing a very good job in rough-to-handle Long Island sand," states Project Supt. Jerry Sposato. "Ample power, plus good maneuverability and flotation enable loaded '295's' to pull from the sand cut fast without pusher assistance."

Payscraper provides the advantage of up or down, on-the-go torque converter power-shifting—with load-speeding, automatic direct drive lock-ups in second, third and fourth gears. The 4-speed, planetary-type torque converter transmission automatically adjusts torque and speed to load.

Torque-cushioning planetary drive axles let the operator "gun" the DT-817 turbo-charged Diesel, and develop maximum rim-pull, fast.

And International design takes the hard

work out of scraper operation. "Two-finger" power-steering is by exclusive rack-and-pinion tandem pump system. 1,920 sq. in. of braking surface is controlled by quick-release valve for fast brake-and-go action. Exclusive International planetary cable bowl control provides operator "feel" and fast heat dissipation when pump-loading sand.

See for yourself how International 295 Payscraper "drive" takes the time-waste out of tough conditions—and lets your operators give you full capacity—full time. Let your International Construction Equipment Distributor demonstrate!



International Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

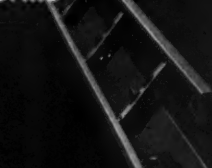
HELTZEL

concrete buckets



Request Bulletin 60-07

highway & airport forms



Request Bulletins 60-13R, 59-12

sidewalk, curb, curb & gutter forms



Request Bulletin H 563-A

JOB ENGINEERED CONSTRUCTION EQUIPMENT

In addition to the items shown here, Heltzel manufactures a complete line of batching plants, spreaders, finishers and spray curing equipment. For complete information, contact your Heltzel distributor—or write today.

I am interested in _____
Please send me descriptive bulletins.
Name _____
Company _____
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City _____ State _____

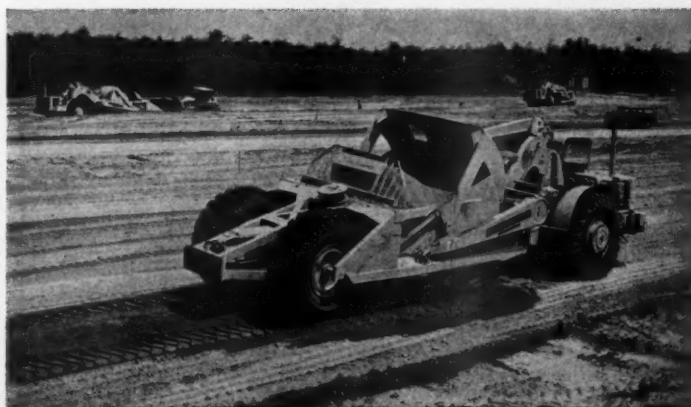
THE HELTZEL STEEL FORM & IRON CO.
Warren, Ohio

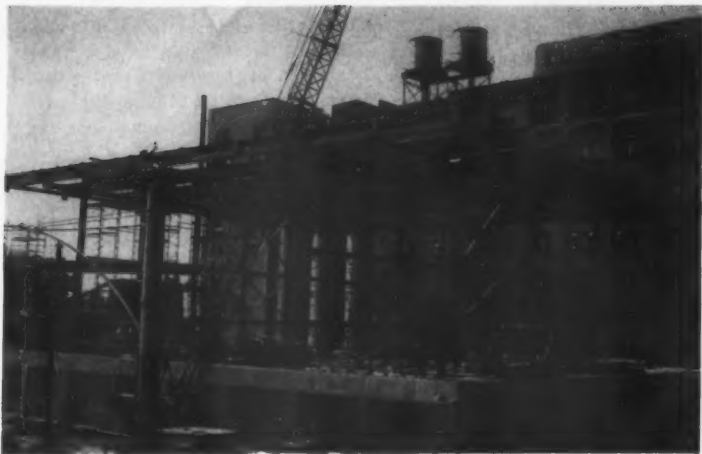
For more facts, use coupon or circle No. 264

Operating in deep, power-hogging Long Island sand, this loaded 295 Payscraper is ready to power-shift up and haul out to the fill. Power-transfer differential helps beat the traction problem in loose sand.

Positive, Payscraper ejection is powered by International "live" PTO-driven Cable Control Unit. You get dozer-like force for positive, steady ejection of hard-to-handle sand or any other scraper-moved material!

Complete, coordinated power control of shifting, steering, braking, and bowl actions builds operator confidence—help you get full capacity and profit from Payscraper.





Mill design alters erection procedures

Exposed exterior steel roof girders and columns, recessed column base plates, and wall panels that cannot be pierced make this floor mill verminproof and required some unusual construction. The roof slab had to be placed in one day so that the concrete would not restrain the cantilevered girders in arriving at a uniform deflection.

STOODY

The Hard-Facing Alloys that give you

"EXPERIENCE" ... INSTEAD OF EXPERIMENTS



When you specify **STOODY HARD-FACING ALLOYS** you get more than metallurgical skill alone! **STOODY** backs its wear resistant products with over 40 year's field experience... 40 years of *exclusive and continuous dedication to the development and manufacture of superior hard-facing alloys!*

• **COMPLETE ALLOY LINE**—Stoody is the only manufacturer with a complete alloy line for manual, automatic and semi-automatic application.

• **BETTER SELECTION**—A wide selection provides an exact alloy choice rather than a compromise, resulting in longer wear life and lower ultimate maintenance cost on your specific wear problem.

• **FIELD TESTED**—Every Stoody alloy is proved in the field under actual operating conditions. Result? More dependable performance—always.

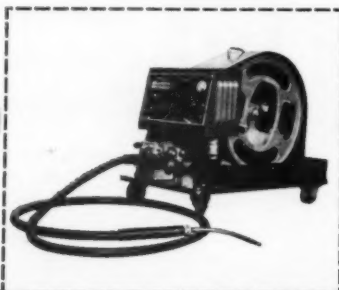
• **PROVEN APPLICATION TECHNIQUES**—Stoody performs all preliminary testing to develop the most productive application procedure. These techniques are available without cost.

• **UNIFORM PRODUCT QUALITY**—Stoody sets the standards for the industry, is recognized as the leader in wear resistant alloy manufacture.

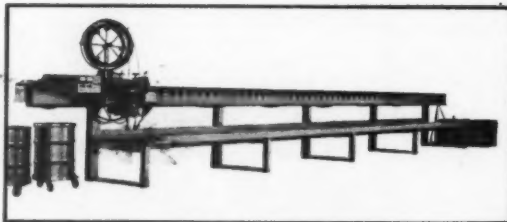
• **READY AVAILABILITY**—Over 750 convenient Stoody dealers and distributors blanketing the United States, industrial Canada and Mexico—no costly delivery delays.



Full line of rods and electrodes for manual application.



Full line of tubular alloy wires for semi-automatic application.



Full line of tubular alloy wires for automatic application.

• **ASSISTANCE FROM FIELD ENGINEERS**—Fast, on-the-spot assistance is available in your plant from trained Stoody Field Engineers. Simply call your nearest Stoody dealer for arrangements.

BE SURE... SPECIFY STOODY...

oldest, most experienced, with the widest proven product line in the industry!

STOODY COMPANY

11904 E. Slauson Avenue • Whittier, California

For more facts, use Request Card at page 18 and circle No. 265

Unusual design called for unusual construction techniques in work on a new steel-framed and enclosed floor mill for General Mills in Buffalo, N. Y. In a departure from traditional mill-factory construction, the structure employs exposed exterior steel roof girders and columns; stainless-steel exterior and galvanized-steel interior insulated walls; and recessed column base plates to make it vermin and dustproof. Interior and exterior wall panels could not be pierced for framing connections, and the roof slab had to be placed in one day so that girders would not be restrained in assuming a uniform deflection or damage concrete while the initial set was taking place.

The building is 134 feet wide, with seven bays 17 feet 8 inches long, and 40 feet high. On each side of the central milling area are mezzanines supported from the main floor and unattached to the walls. This technique was used to prevent any dust-collecting areas. The mezzanines are equipment platforms with wheat preparation on one side and finished-product handling on the other side underneath.

The frame was designed for stability without the exterior columns—which carry wind load, live load, and the curtain wall—since no floor-beam connections could be made. Exposed roof framing consists of eight girders, each one fabricated from one piece of 36WF230 steel 135 feet long, or 15½ tons per girder.

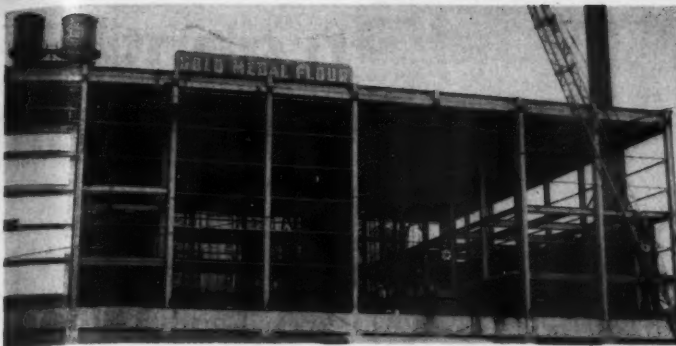
To prevent condensation from forming on the exposed girders in the ceiling, because of the high relative humidity maintained for milling operations, continuous electric heating cables were run along the main roof girders connected to the web at the intersection with the roof slab.

Cantilever construction used

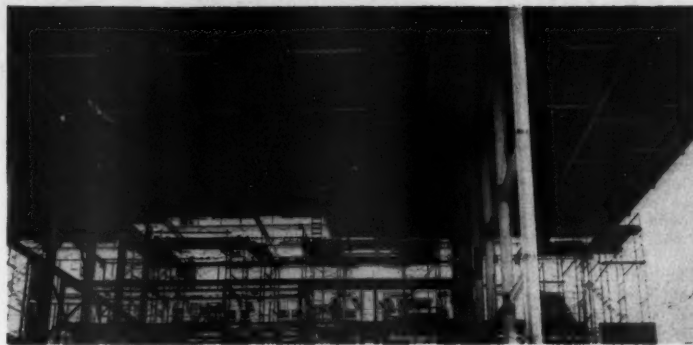
Cantilever construction was used for carrying dead loads so that the work on the building would not be delayed while awaiting erection of the bins. The dead load of the 6-inch roof slab was applied to the girders while in the cantilever state to achieve the desired roof slope. Concrete for the roof slab was placed in one day; this assured that the girders would not be restrained in assuming a uniform deflection and that concrete would not be damaged while the initial set was taking place.

The final deflection of the cantilever

CONTRACTORS AND ENGINEERS



Rear elevation of the completed steel frame shows the girts in position before the steel curtain walls were erected. The insulated wall panels were connected to the girt framing with concealed fastenings since specifications for the structure prohibited piercing of the panels.



Forms are in place for the roof slab. The exposed roof frame is made up of eight girders, each one fabricated from one piece of 36WF230 beam. Joists spanning between the beams are adjustable trusses used for shoring the roof slab. They were removed before the building was enclosed.

levers was not entirely uniform, so the girders were lifted to conform to the girder with the least deflection, and the exterior columns were set, shimmed, and grouted to this elevation. Joists were adjustable trusses used for shoring the roof slab and were removed when construction was completed. The undersurface of the roof is an unbroken plane on which no dust can settle.

After the frame and roof were completed, the wheat storage bins were erected, and then the wall framing. The insulated wall panels, consisting of continuous metal sheets about 40 feet long both inside and outside, were connected to standard girt framing with concealed fastenings. No piercing of the interior or exterior steel wall panels was permitted, even for framing connections. This was to prevent vermin from getting into the space between the interior and exterior panels.

Beneath the building is a 15-foot-high basement with reinforced-concrete frame and walls supported by pile underpinnings carried to rock. The stairs and elevator towers are reinforced-concrete frame with masonry panels.

The completed structure, with its smooth walls and relatively uninterrupted ceiling, is a large step forward in solving housekeeping problems associated with flour milling.

Preliminary plans and outline specifications to achieve the dustproof characteristics were prepared by the General Mills Engineering Department. Consultant for the structure and building was the office of J. Fruchtbaum, with David W. Gunsalus, P.E., as associate in charge. Johnson, Drake & Piper, Inc., was the general contractor, and the Ernst Construction Division, Ernst Steel Corp., fabricated and erected the structural steel. All are Buffalo firms. THE END

American Hoist appoints

■ Percy S. Gough has been named to the newly created position of director of marketing for the American Hoist & Derrick Co., St. Paul, Minn. He will head all marketing activities of the company, its divisions, and subsidiaries. Gough has been general sales manager of the Crosby-Laughlin Division in Fort Wayne, Ind., since 1956.

For more facts, use Request Card at page 18 and circle No. 266

Can your loader handle these six jobs?...



Grade with motor grader accuracy using the 4-in-1's "carry-type scraper" action—as this owner is doing, fine-grading a parking area to exact specifications. Operation "boils in" excess dirt for easy removal.



Exclusive 4-in-1 clam action lets you grab, lift, and load heavy, unwieldy objects like stumps, boulders, and concrete slabs—without any need of hand work. You clam-on, lift, and release the load, hydraulically.



Simply open the clam, set "blade" segment to cut—and the 4-in-1 doubles for a full-sized dozer in capacity, working range, and control accuracy. Only "hand work" to do is move the hydraulic control lever.

SURE, if it's a Clam Action 4-in-1!



Clam-handle sticky materials with the 4-in-1—even in conditions that clog old-type buckets. Exclusive 4-in-1 bottom-dumping uses the gravity pull and clam "pull apart" action for positive self-cleanup!



Only clam-action 4-in-1's provide back-drag action—speeding masonry wall demolition here—also widely used for bank-grading, ditch-cleaning, and pulling down materials, quickly and efficiently.



Place the open clamshell over builder's scrap, rubble, isolated piles of loose materials—close the clam to fill the bucket, instantly, without "chasing" the material. And without any hand work, whatever!

Why limit the variety of jobs and conditions you can handle? Why limit your income to what an old-style "single-action" loader can earn you? Why be satisfied with anything less than 4-in-1 "equipment spread" utility—that multiplies profit-making capacity? Get positive proof! Let your International Drott Distributor demonstrate the 4-in-1 size you need! Five sizes available from ¾ to 3 cubic yards.



International Harvester Company, Chicago 11, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

**INTERNATIONAL
DROTT**

The newest engineering achievement in the nation's space program is a 310-foot-high gantry for servicing the 1,250,000-pound-thrust Saturn. Weighing 2,800 tons, the gantry has its own hydraulic, electrical, and telephone systems, five movable aluminum platforms, and a 60-ton traveling bridge between the 70 x 37-foot steel towers. Completely independent in operation, it rides back from the launch pedestal on rails.



Saturn gantry: A-OK

The tallest moving structure in Florida—a 310-foot-high twin-legged steel tower that has its own hydraulics system, electrical system, and water supply, and that can move itself at a respectable pace despite its 2,800-ton weight—was turned over to the National Aeronautics and Space Administration in recent weeks.

The structure is in reality an immense gantry that will be used to service NASA's (and the United States') biggest rocket—the 1,250,000-pound-thrust Saturn—as well as its successors, which will have power on the order of 3 million pounds of thrust.

The gantry works in an \$11 million complex to support the Saturn during testing and eventual firing, probably early next year. And the entire complex, known at Cape Canaveral as Complex 34, is only the first of three such installations now planned. The remaining two will be even larger.

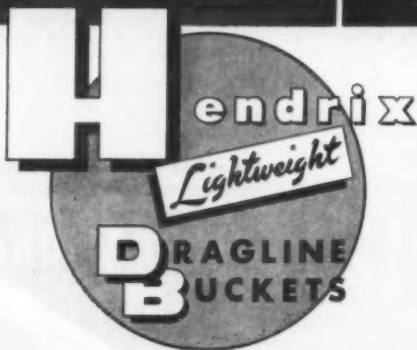
Dominating the flat Cape and visible for more than 20 miles in any direction, the gantry is an engineering marvel in itself. But the entire complex, covering about 45 acres of specially compacted ground, includes some of the heaviest concrete foundations ever built.

Equipment

Designed in part (final details) and entirely built by Kaiser Steel Co., the gantry is, in fact, two steel towers, each 70 feet long and 37 feet wide, connected at the top level by a superstructure. It carries two full-sized passenger elevators to move personnel to various levels, and it has five movable aluminum enclosed platforms, which can be extended outward into the 56-foot gap between the tower legs to fit closely around a rocket assembly. These can also move up and down as required.

Part of the permanent equipment are: a 60-ton-capacity traveling bridge crane, with a 40-ton and a 60-ton hook, that can also move up and down and sideways to place rocket components; independent electrical and water systems; telephone systems; and a complete control system for "driving" the tower when it is moved a distance of some 600 feet from its place around the rocket to a "park-

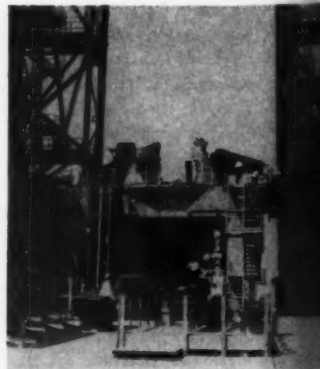
PROTECT PROFIT MARGINS WITH HENDRIX DRAGLINE BUCKETS - ENGINEERED DESIGNED AND BUILT FOR GREATER PRODUCTION AT THE LOWEST COST-PER-YARD



*"A Type for Every Digging Purpose"...
1/4 to 40 Cubic Yards—Perforated or Solid*

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

For more facts, use Request Card at page 18 and circle No. 267



The pedestal for the Saturn, containing 4,400 yards of concrete and 580 tons of reinforcing steel, is 42 feet square, 27 feet high, and stands in the center of the 430-foot-diameter launch pad. Eight arms at the top will support the rocket during firing.

CONTRACTORS AND ENGINEERS

ing" position when firing is contemplated. Some grand totals are illuminating. More than \$500,000 worth of hydraulic equipment is used in the tower's operation. Connections in the field were made with more than 500,000 high-tensile bolts ranging in diameter from 3/4 inch to 1 1/4 inches. Roughly 1,700 tons of the tower's total weight is steel; the rest is in equipment.

Reinforcing for legs

The four corner posts on each leg are made up of 14-inch WF steel members of very heavy steel weighing 398 pounds per linear foot. These are reinforced for stiffness with welded-on steel plates that weigh an additional 100 pounds per square foot. The cross bracing—designed to enable the gantry to withstand winds up to 125 mph—consists of diagonals of steel pipe ranging from 20-inch ID near the base to 14-inch ID at the top; cross braces are of WF beams ranging from 12 to 10 inches. Each leg contains, in effect, a 2-story building, enclosed with foam plastic that is designed to blow out easily in the event of a misfire, to house operation equipment and rocket checkout apparatus.

The tower, when in standing position and servicing a rocket, rests on heavy steel pads set in the concrete of the launching pad. When it is to be moved, the whole structure is jacked off these pads by self-contained hydraulic jacks and the weight is transferred to two pairs of carriages, each equipped with twelve 36-inch-diameter railroad-type flanged wheels. The four 100-hp motors in each carriage are powered by a 500-kw diesel generator installed in the structure, and movement is controlled from a cab 27 feet above the ground. The enormous structure can move at a maximum speed of 40 fpm.

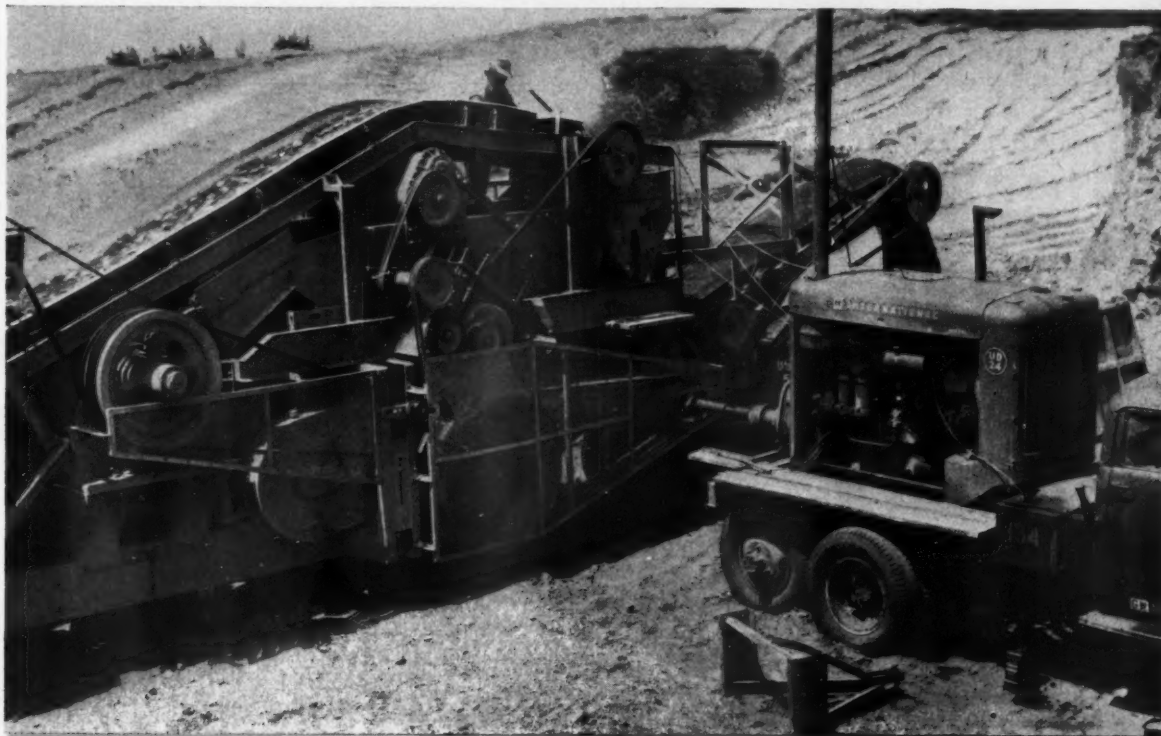
The gantry travels on standard-gauge railroad rails, but these weigh 171 pounds per foot, nearly double high-service railway-rail weight. The rails are supported on huge foundation beams, each 8 feet deep, 10 feet wide, and 538 feet long.

The entire 45-acre launch pad and service-structure area—including that under the rails for the gantry—was compacted with the Vibrofloatation Method to a depth of 28 feet below

(Continued on next page)



A look at the future: this is the first flight configuration of the Saturn C-1 rocket in the Fabrication and Assembly Engineering Division at the George C. Marshall Space Flight Center, Huntsville, Ala. The C-1 will be able to put 10 tons into low earth orbit.



**"8 years ... 12,000 hours ...
never had the heads off!"**

International power assures aggregate supply for soil-cement experiment in Minnesota

Eight miles of experimental highway are being constructed on new grade as part of a soil-cement testing project near Fairmont, Minn. Resistance to wear and weather damage will indicate the best type of construction for subbase, with conventional bituminous paving on top. Values range from 2% to 9% of cement in the soil, and sections are built in 6- to 10-inch layers.

To insure peak aggregate production, W. Hodgman & Sons, Inc. of Fairmont, depends on International power. A TD-25 in the pit dozes gravel from different levels to obtain proper gradation, while a reliable International veteran powers the Cedar Rapids Commander crusher. This heavy-duty diesel engine has been in continuous service

since 1953, running about 1,500 hours per year with very little time off for maintenance. Such records are typical of IH power, as thousands of contractors prove on construction jobs all over the country.

Your jobs, too, will benefit from International economy and dependability. All '35 models—16.8 to 385 max. hp—are built for heavy-duty service, and are available from stripped engines to complete power units. Your nearby International Engine Distributor or Dealer will be happy to give you complete and specific information, as well as installation assistance if you need it. Call him soon!

**INTERNATIONAL[®]
H. ENGINES**

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE

For more facts, use Request Card at page 18 and circle No. 268



This detail shot shows a portion of the two pairs of carriages that will move the gantry back from the launch platform before a firing takes place. Each has twelve 36-inch-diameter railroad-type flanged wheels, and four 100-hp motors powered by a diesel generator. Rails are on foundation beams. During servicing the structure rests on steel pads in the launching-area concrete.



From the air, the gantry is the focal point of the \$11.1-million launch complex, which covers 45 acres of specially compacted ground. The circular launch control building is to the left of the gantry, connected to the rocket area by cableway tunnel. Farther to the left is the LOX facility. The islands in roadways are for camera pads.

(Continued from preceding page)

finished grade after some 7,000 cubic yards of backfill had been pumped into the area.

Possibly the most impressive structure—other than the blockhouse that controls the entire complex—is the 430-foot-diameter launch pad, consisting of an 8-inch reinforced-concrete slab covered with firebrick to protect it from heat.

In the center of this pad stands the actual pedestal from which the huge rocket will be fired. The gantry fits around both sides of this pedestal during assembly and servicing, then moves away to leave the missile standing free on the pedestal. This

structure is 42 feet square and 27 feet high, and contains some 4,400 cubic yards of concrete and 580 tons of reinforcing steel. It stands on a spread foundation, 160 x 106 feet, with a depth varying from 8 to 9½ feet below the surface of the pad. The intervening space is filled with earth. The main support for the pedestal consists of four concrete columns, each 7 feet 4 inches square, protected from the effects of blast and heat by steel liner plates. Atop the pedestal, around a circular opening for the flame, are eight arms that will support the missile.

A rail-mounted flame deflector—a 120,000-pound steel structure built in a triangular shape—will be rolled under the pedestal opening before firing, to deflect the 5,000-degree rocket blast in opposite horizontal directions.

Other structures

The launch control center, or blockhouse, is similar to—but larger than—blockhouses built at Cape Canaveral for Titan and Atlas missiles. It is a domed structure, 120 feet in diameter, with its roof formed by a 5-foot-thick reinforced-concrete dome that is covered with 11,000 cubic yards of earth fill to a depth of 7 feet, then with a final 4-inch coat of sprayed-on concrete. It contains about 10,000 square feet of usable protected floor space, has a blastproof main entrance door that weighs 23 tons, and is designed to withstand a blast pressure of 311,000 pounds per square foot.

Also a part of the complex are two liquid-oxygen (LOX) storage tanks at a distance of about 650 feet from the launch pedestal; two 30,000-gallon fuel tanks (kerosene) connected to the launch area 950 feet away by an 8-inch pipeline; a skimming basin, 104 x 180 feet, to collect fuel that might be spilled and keep it out of the normal drainage channels in the area; a 30,000-square-foot operations support building for general shop and engineering activities; and a water system capable of delivering 13,000 gpm to four hose nozzles and of flushing the entire pad to wash away any spilled fuel.

Personnel

Construction was under the direction of the U. S. Army Corps of Engineers, through its Jacksonville District. The project officer was Capt. Frederick F. Irving, with Donald E. Eppert as over-all Corps coordinator. Diversified Builders, Inc., Montebello, Calif., was the prime contractor on the launch control center; Kaiser Steel was the prime contractor for the \$4,800,000 gantry; Henry C. Beck Co., Palm Beach, Fla., was the contractor for the launch pad, pedestal, high-pressure gas and propellant facilities, and for other facilities and roads.

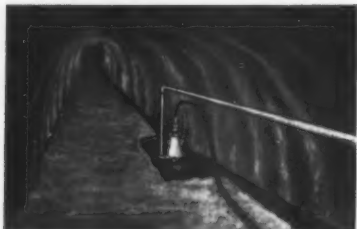
The designer of the complex was Maurice Connell & Associates of Miami, with Kaiser Steel doing design on the gantry.

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Drain muddy sumps with the standard Model VP4. Capacities up to 230 gpm or heads up to 100 ft. Two connected in series—to make a Model VP4S two-stage sump pump—will handle capacities up to 224 gpm or heads up to 200 ft.



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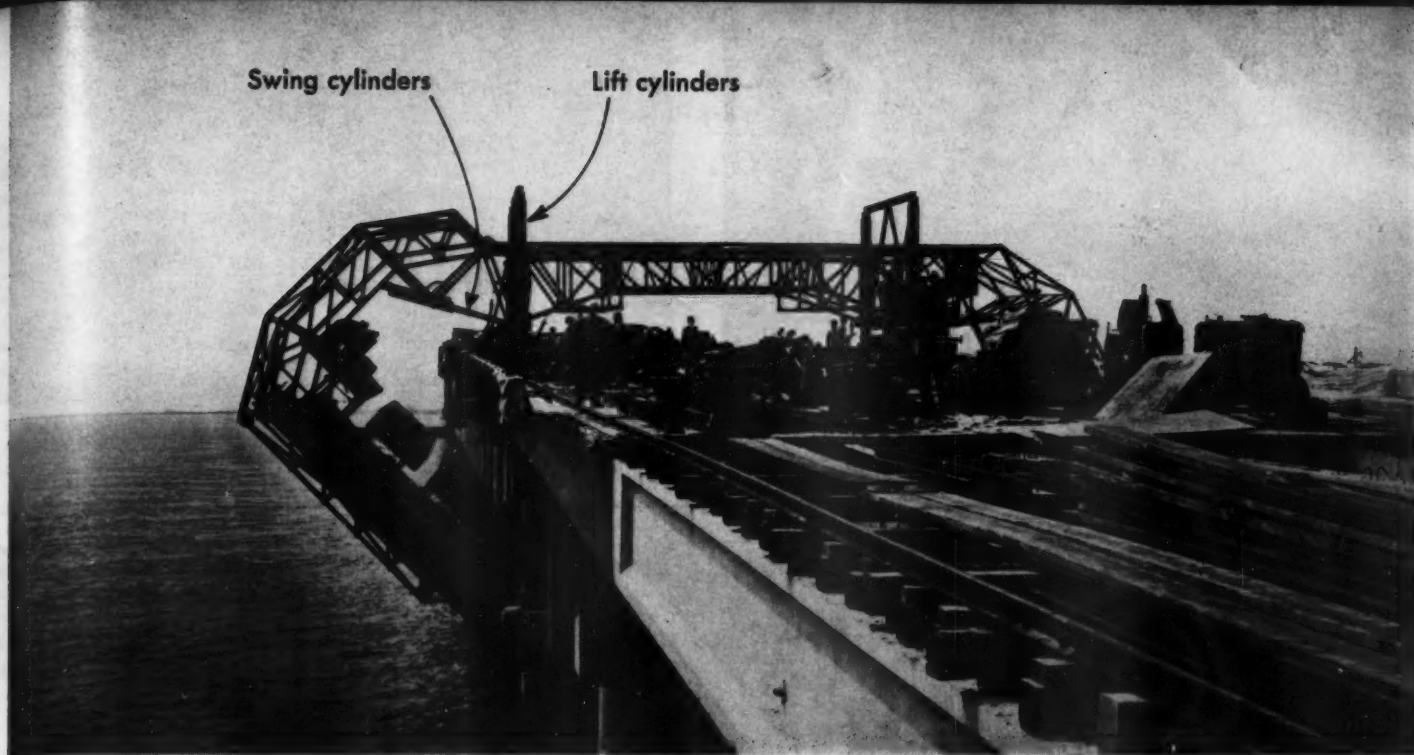
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THE
ENGINEER



Deck forming system cuts hand labor

by BILL ALLEN, field editor

A unique forming system for the deck of a prestressed-girder bridge allowed a contractor to place concrete for as many as three 67-foot spans per week. Texas Gulf Construction Co., Inc., Galveston, put the labor-saving system to work on its \$3.7 million contract for construction of the Galveston Bay Causeway.

The system is built around a machine, resembling a gantry, that rides on rails on top of the bridge. The machine carries the steel deck and curb forms forward as a unit—half a span at a time—and raises the forms into position. During concrete placement, the forms are supported by double steel channels bolted to the underside of the concrete girders. The system eliminates most of the costly hand labor generally associated with setting and stripping forms.

Although the forming system has been used before

in the state, Texas Gulf Construction Co. adapted it to meet the special requirements of a long, prestressed-girder bridge. Credit for the fabrication and much of the design work on the forms goes to Dixie Form Co., San Antonio.

The all-steel forming system was used on the 119 causeway spans, each of them 67 feet long. A similar system with wood forms was employed on the three continuous steel spans of 130-150-130 feet.

The 8,403-foot causeway borders the existing low-level causeway connecting Galveston to the mainland. Designed by the Texas State Highway Department, the new causeway rises on 2-column piers to a maximum height of 73 feet above the shipping channel. Its 40-foot roadway, with 18-inch curbs, carries 3 lanes of one-way traffic on Interstate 45 (U. S. 75).

(Continued on page 33)

Hand labor that would have been required for setting and stripping forms on 119 spans of the Galveston Bay Causeway is being eliminated by this gantry that carries steel forms for the deck and curb as a unit, moves them forward, and sets them hydraulically for half of a 67-foot-long span. At this point, the platforms are swung outward to bypass piers; eight hydraulic cylinders supply the power.

Form support between a pair of girders includes, from the bottom up, a 9-inch double channel, or needle beam, bolted to the girder bottoms to support a pair of adjustable steel shores. These meet a 6-inch I-beam that supports 4-inch I-beam joists on about 18-inch centers. Welded to the joists is a 3/16-inch steel plate.



Curb and parapet wall forms are also supported by the needle beams. The walkway serves as a bracing point for the wall forms. Outer wall and curb forms, on hinges, swing back for steel placement.



A barge-mounted Manitowoc 3900 sets the 67-foot girders on pier caps. Girders are brought to the crane by a barge pushed by a war-surplus LCM. Another LCM was also on the job; they were especially useful in delivering concrete to crews.



Crewmen set deck steel as the 3900 sets the prestressed girders. Note the wood fillers that close the small gap between the steel deck form and the concrete girder. This takes care of any irregularities in the girders.



TS-260
18-yd—230-hp

TS-360 30-yd—340-hp

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A Koehring 304 crane picks up one of the 2-yard buckets from the LCM and swings it to the Dixie steel tie-beam forms. The tie beam connects the two columns of the pier at about water level.



Concrete for the piers and some of the spans is carried over water in the surplus LCM. This Smith mixer on a White truck is unloading into three 2-yard buckets that will be carried by the boat.

te the wood
the concrete



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(Continued from page 31)

The existing low-level causeway will soon be rebuilt and raised on its original foundations. During this construction, detoured traffic will be carried by the new causeway.

Hydraulic-powered rig

The all-steel gantry rig rides on two rails over the outside girders. The gantry carries a split work platform beneath the girders. Each half of the platform swings outward to bypass the piers. In addition to the swinging action, the platform can be raised and lowered vertically. This motion allows the forms to be set in place and stripped as a half-span unit. Eight hydraulic cylinders supply the power for the swing and up-and-down motions. A hydraulic motor, geared to the wheels of the rig, supplies the power for travel. On an incline, two hand winches act as brakes. One operator manipulates all the hydraulic controls on the machine.

All-steel forms

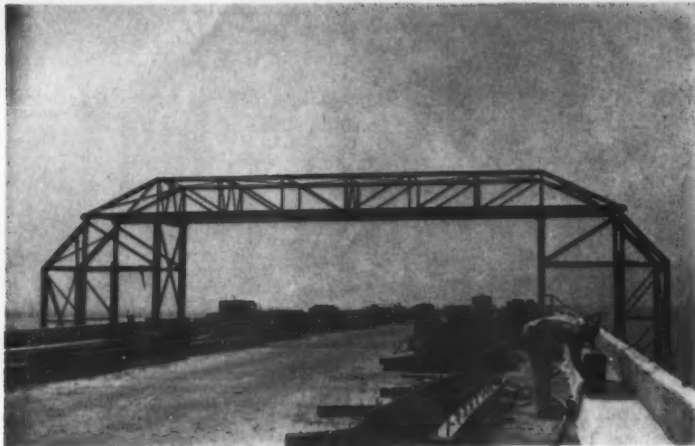
The steel forms and supporting members are bolted and welded together to make a 34-foot-long half-span length. The basic supporting member is a 9-inch double channel—or needle beam—at 10-foot centers transverse to the center line of the bridge. The needle beam is bolted with 1-inch bolts to inserts in the bottoms of the six girders. Rising from the needle beam are pairs of adjustable steel shores. These meet a 6-inch I-beam that supports 4-inch I-beam joists on about 18-inch centers. Welded to the joists is a 3/16-inch steel plate. About an inch separates the steel plate from the top edge of the girder. This gap is blocked with a wood filler after the forms are in place.

The curb and parapet wall forms are also supported by the needle beams. Pairs of adjustable pipe shores rise to support the forms as well as a small cantilevered work platform. Diaphragm forms are also included in the system.

These are the basic steps in the forming. First, men loosen the bolts holding the needle beams to the underside of the concrete girders. After the beams are bolted to the gantry platform, its two halves are swung outwards. Three forms and a curb section are carried by one-half of

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8% more capacity
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The new TS-160 now carries 8.5 truck yards... 13% more than previous models. The TS-160 is the only machine in its class backed up with "big" scraper performance features. The "160" also gives you the widest cutting surface for easier loading, smoother finishing... the highest apron opening for fast, clean spreading. See the 155-hp TS-160 today. It'll work alone, or fit right into your largest earth-moving spread.



This is a smaller gantry used in forming the deck for the steel-girder section of the bridge. Lighter in weight, and powered by hand, it was used as a work platform by crew members who handled setting and stripping. Swing was powered by a ratchet-type wrench; hand winches controlled travel.

(Continued from preceding page)

the platform as a unit. Two forms and a curb section are carried by the other half.

The gantry travels forward, bypassing the piers, until it arrives at the desired spot, and the operator swings the halves of the platform back together. Then, using the straight upward movement of the rig, he raises the forms into position between the girders. After men bolt the needle beams to the concrete girders, the rig moves back to pick up more forms. Minor changes in the height of the forms are taken care of by adjustment of the screw-type shores.

The forms for the diaphragms over the pier caps are included in the traveling form. The half-span diaphragm, however, must be formed and placed in advance.

Concrete handling

To keep the work moving smoothly ahead, the contractor handled concrete placement for the single spans in a reverse sequence. The first placement started three spans ahead of the completed deck. The second and third moved backward toward the completed deck. The contractor had sufficient forms to work three spans at one time.

On the first placement, the mix was bucketed to the forms from a barge-mounted Manitowoc 3900 crane. On the second and third, Prime-Mover power buggies shuttled the concrete from transit-mix trucks



Seated on a platform atop the gantry, the operator manipulates the hydraulic controls that govern the swing, lift, and travel of the rig.

over runways to the forms. Each placement of 76 cubic yards completed an entire span, including curbs and parapet walls.

Two war-surplus landing craft (LCM's) proved to be handy rigs for moving the concrete over the water. Each carried three 2-yard buckets that were filled at dockside by the transit-mix trucks. A batch plant, set up near the bridge, supplied the concrete for the job.

With this forming and placement system, the work moved ahead swiftly. On the average, the crews completed three spans per 5-day week.

On the three steel-girder spans, a modified version of the same system was employed. The gantry, lighter and powered by hand, did not ac-

tually set the forms; it provided a work platform from which men could set and strip them. On this gantry, the swing was powered by a ratchet-type wrench. The travel was controlled by hand winches. No vertical motion was necessary for the work platform.

The 714 prestressed girders for the bridge were produced by Concrete Unlimited at the company's yard in Galveston. A slip going into the yard allowed gantry cranes to load the girders directly onto the barge that carried them to the bridge.

Also produced at the yard were the hollow prestressed-concrete piles that support the piers. The 20-inch-square piles with an 11-inch void vary in length from 70 to 86 feet.

Alvin Kelso, president of Texas

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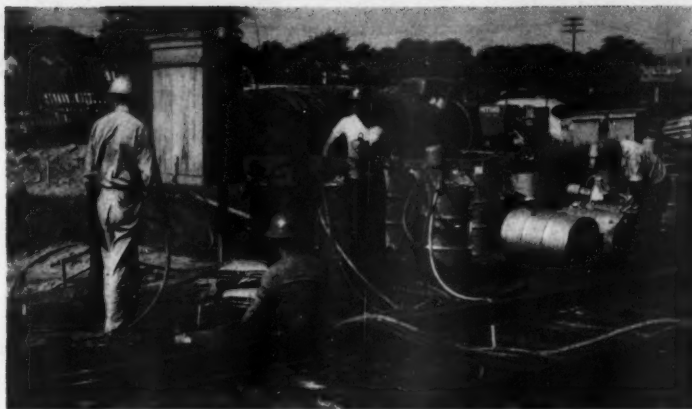
Gulf Construction Co., visits the job frequently. His general superintendent is Bruce Testa. John Rezek, Jr., is the form foreman, and George Hall is the concrete foreman.

THE END

Sales representative appointed by Simplex

William Saul has been named a sales representative for Simplex Forms System, Inc., Rockford, Ill.

He will handle sales and service of Simplex and Simplex-Waco concrete forms in the Rockford area, central Illinois, the eastern half of Wisconsin, and northern Indiana. He was formerly a sales and service engineer for the structural precast division of the Cedar Rapids Block Co.



gauge liner plates as they drove forward. The tunnel consisted of a series of 18-inch-wide rings, each made of four liner plates. Progress varied from 3 to 7 rings installed per shift, depending on the amount of soil stabilization required. Armco Drainage & Metal Products, Inc., handled the tunneling under a subcontract awarded by Hertel-Deyo Co., Grand Rapids, a general contractor on the expressway project for which this job was required.

SOIL-STABILIZATION chemicals are being prepared for injection through an access pit (left) into a 60-inch-diameter tunnel through which concrete pipe sections will be threaded for a 42-inch sanitary sewer being installed under six railroad tracks and a large varnish storage tank at Grand Rapids, Mich. The chemicals, a combination of Columbia calcium chloride and sodium silicate, were employed to solidify the tunnel roof. Crews then used hand or air tools to excavate the heading and install Armco 10-

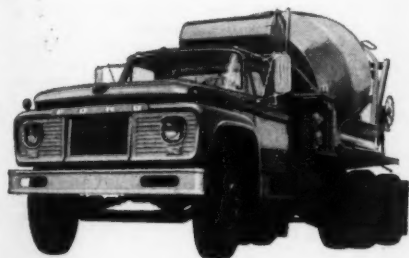
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- New Super Duty V-8 Engines for 100,000 miles or 24 months!
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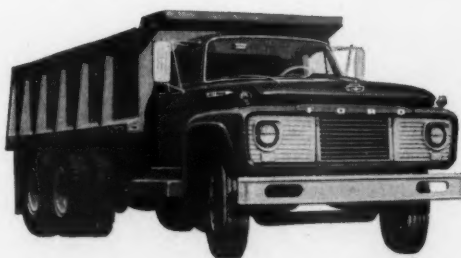
Ford's rigid quality control program gives you unsurpassed dependability! Positive evidence of uniformly high production and inspection standards is the exclusive new 100,000-mile engine warranty. On 401-, 477- and 534-cu. in. Super Duty V-8 engines, each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. Warranty covers the full cost of replacement parts . . . full labor costs for the first year or

50,000 miles, sliding percentage scale thereafter.

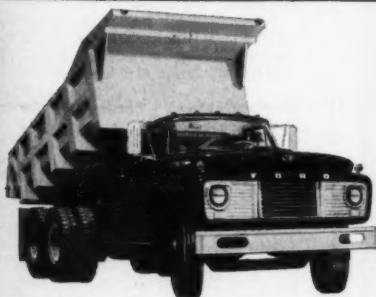
In addition, an extended warranty covers all 1961 Ford Trucks of any size. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement as normal maintenance of such items as filters, spark plugs and ignition points. *No other trucks give you such protection for your investment; never before could you be so confident of long-range durability!*



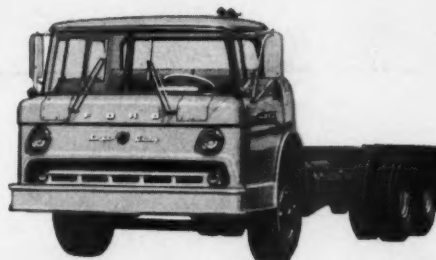
Tougher tandems offer greater strength in chassis, cab and sheet metal for longer life. Full-Torque fly-wheel power take-off is available for more efficient drive of transit mixers and heavy-duty equipment.



Timken or Eaton rear axles, with capacities up to 38,000 lb., are available in all Super Duty tandems. High capacity front axles have wider track for increased stability when cornering or in rough terrain.



GVW's up to 51,000 pounds permit big, profitable payloads. Heavier gauge metal and stress-isolating independent mounting for radiator, fenders and cab give you greater durability.



Tandem Axle models are available with tilt cabs. As with conventional tandems, aluminum walking beams, wheels and fuel tanks are offered to cut weight . . . increase payload capacity.

Only Maginniss



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Plus BENEFITS

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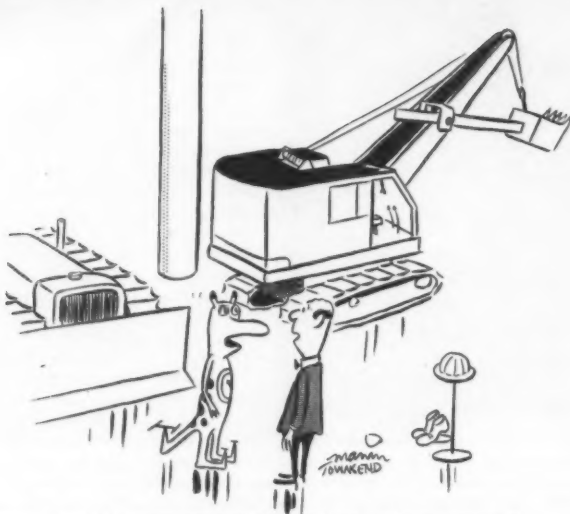
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AUGUST, 1961

35



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Convention Calendar

August 14-17 Fundamentals of Occupational Safety

Ninth annual course, Pleasant Hall, Adult Education Center, Louisiana State University, Baton Rouge, La. J. C. McColister, General Extension Division, Pleasant Hall, Louisiana State University, Baton Rouge, La.

August 20-25 National Shade Tree Conference

Conference, Hotel Leamington, Minneapolis, Minn. L. C. Chadwick, Department of Horticulture, Ohio State University, 1827 Neil Ave., Columbus 10, Ohio

August 24-25 Regional Conference on Improved Highway Engineering Productivity

Conference, sponsored by AASHTO, BPR, the Massachusetts Department of Public Works, and engineering schools in

the Boston area, Somerset Hotel, Boston, Mass. W. D. Dillon, assistant chief, Division of Development, Office of Operations, Bureau of Public Roads, Washington 25, D. C.

September 6-8 New York State County Highway Superintendents' Association

Summer meeting, Concord Hotel, Kiamasha Lake, N. Y. Harry R. Mason, secretary, 1420 Western Ave., Albany, N. Y.

September 11-15 and 18-22 Fundamental Principles of Nondestructive Testing

Summer conference course, Ohio State University, Columbus, Ohio. Dr. Robert C. McMaster, course supervisor, Department of Welding Engineering, Ohio State University, 190 W. 19th Ave., Columbus 10, Ohio.

September 14-15 Engineering Management Conference

Joint conference of ASME and AIME. Hotel Roosevelt, New York, N. Y. American Society of Mechanical Engineers, Meetings Department, 29 W. 39th St., New York 18, N. Y.

September 20-22 Producers' Council 40th Convention

Annual meeting and chapter presidents' conference, Pittsburgh Hilton Hotel, Pittsburgh, Pa. Francis X. Brown, executive assistant, Producers' Council, Inc., 2029 K St. N.W., Washington 6, D. C.

September 24-27 Public Works Congress and Equipment Show

Show, Municipal Auditorium and Hotel Leamington, Minneapolis, Minn. Robert D. Bugher, executive director, American Public Works Association, 1313 E. 60th St., Chicago 37, Ill.

September 25-28 American Welding Society

Fall meeting, Adolphus Hotel, Dallas, Texas. F. J. Mooney, convention manager, American Welding Society, 33 W. 39th St., New York 18, N. Y.

September 25-28 Industrial Building Exposition and Congress

Exposition and congress, Coliseum, New York, N. Y. Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

October 3-6 Ohio Short Course on Roadside Development

Twentieth annual course, Departments of State Bldg., Columbus, Ohio. W. J. Garmhausen, chief landscape architect, Ohio Department of Highways, 450 E. Town St., Columbus 15, Ohio.

October 4-5 National Slag Association

Annual meeting, Pocono Manor Inn, Pocono Manor, Pa. National Slag Association, 613 Perpetual Bldg., Washington 4, D. C.

October 8-11 County Division of the American Road Builders' Association

Annual National Highway Conference, Broadview Hotel, Wichita, Kans. Ben F. Ostergren, managing director, County Division, ARBA, 600 World Center Bldg., Washington 6, D. C.

October 9-11 National Association of Corrosion Engineers

North Central Region meeting, Chase Park Plaza Hotel, St. Louis, Mo. Otto H. Fenner, Monsanto Chemical Co., 1700 E. 2nd St., St. Louis 4, Mo.

October 15-19 Prestressed Concrete Institute

Annual convention, Brown Palace and Cosmopolitan Hotels, Denver, Colo. Norman L. Scott, executive secretary, PCI, 205 W. Wacker Drive, Chicago 6, Ill.

October 16-20 American Society of Civil Engineers

Annual convention, Statler-Hilton Hotel, New York, N. Y. Otis D. Gouty, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

October 16-20 National Safety Council

National Safety Congress and Exposition, Conrad Hilton Hotel, Chicago, Ill. R. L. Forney, secretary, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 23-26 National Association of Corrosion Engineers

South Central Region conference and exhibition, Shamrock Hilton Hotel, Houston, Texas. T. J. Hull, executive secretary, 1061 M & M Bldg., Houston 9, Texas.

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Galvanized Beth-Cu-Loy Drainage Pipe

For over 50 years thousands of corrugated metal pipe installations have been studied. These studies show clearly that drainage structures made of galvanized corrugated Beth-Cu-Loy steel sheets are as durable as you could want. That's one reason why you can figure that Beth-Cu-Loy pipe will probably outlive the original drainage need.

A Beth-Cu-Loy drainage structure gets its durability from two sources. First, the strong copper-bearing steel sheet itself; second, the tightly-adherent corrosion-resisting zinc coating (2 oz per sq ft by triple spot test). These two ingredients combine to give you a pipe that is strong, long-lasting, light in weight, flexible.

And flexibility is important, too. It is the flexibility of a Beth-Cu-Loy pipe that transfers some of the imposed load to the surrounding material. Many states actually specify the use of corrugated steel pipe under fills of less than 2 ft or more than 15 ft. The product lends itself to the pipe-arch design where low headroom is a factor.

A Beth-Cu-Loy pipe is easy to handle and install; requires a minimum of engineering. Field joints can be made in minutes without delays for setting or curing. The Beth-Cu-Loy sheets conform in all respects to the specs of the AASHTO. Ask your fabricator for full details about drainage structures made from corrugated galvanized Beth-Cu-Loy.

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... economy
... versatility

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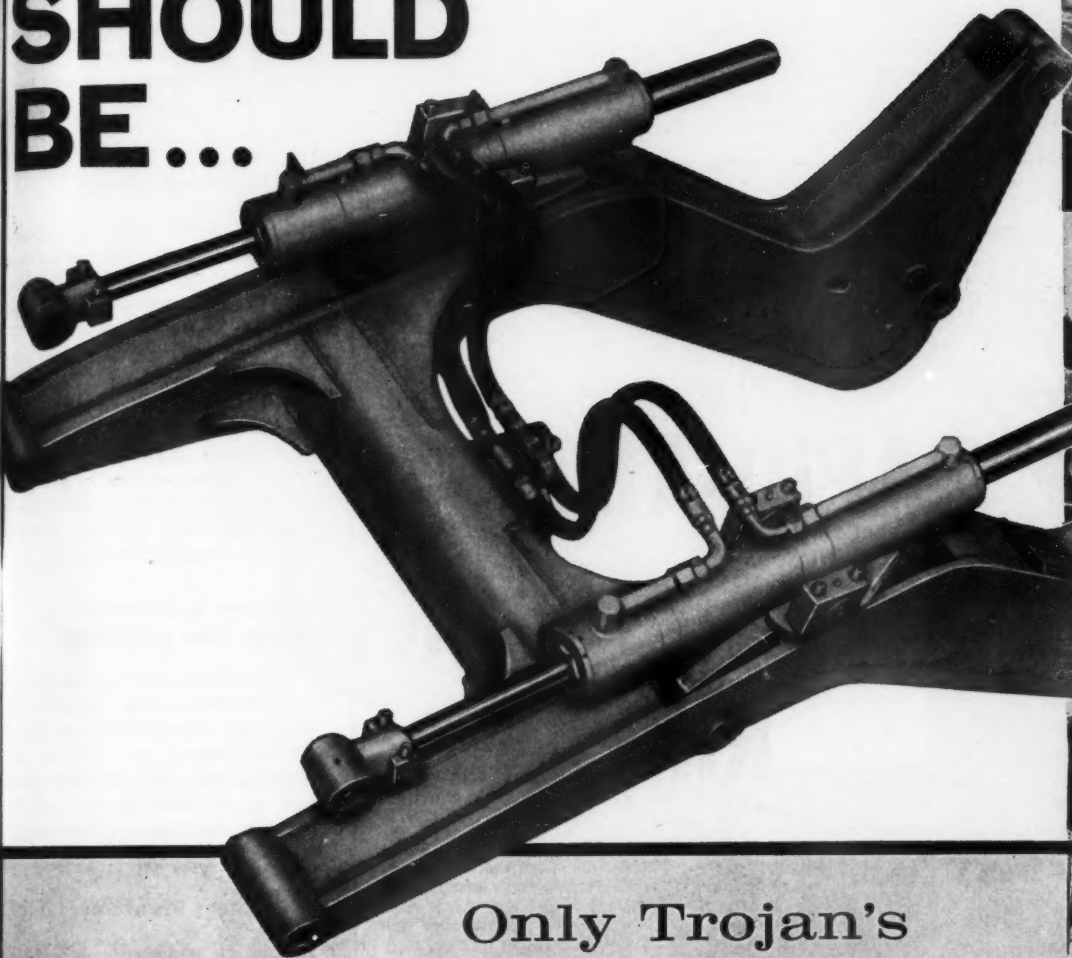
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Tar-enameled Beth-Cu-Loy corrugated steel pipe being installed as storm sewer along eastern Pennsylvania road. The pipe should easily outlast this drainage need.

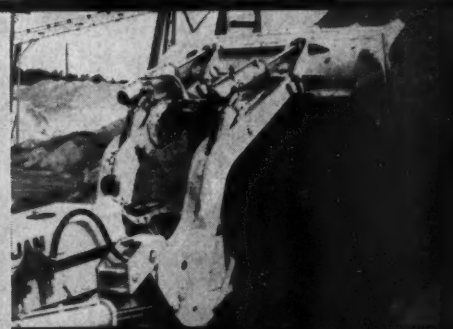
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For more facts, use Request Card at page 16 and circle No. 274

Hotel, Boston
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ENGINEERS

AD NO 44-28

Names in the News

Harry C. Grieme,
vice president,
Walter Kidde Con-
structors, Inc.



Walter Kidde names new vice president

Walter Kidde Constructors, Inc., of New York and Houston, has elected Harry C. Grieme vice president. He will be in charge of the business-de-

velopment activities of the industrial engineering and building firm, which is a subsidiary of Electric Bond & Share Co.

Grieme has been with the new-business department United Engineers & Constructors, Inc., for the past six years.

Construction man cited by development group

The Delaware Valley Council, a nonprofit organization that offers plans to develop and improve parts of Pennsylvania, New Jersey, and Delaware, has named Ralph Cornell,

president-owner of Cornell & Co., Inc., Woodbury, N. J., and Philadelphia, Man of the Month.

Besides heading his own independent steel construction firm, Cornell is chairman of the Delaware River Port Authority, president of the Steel Association of Metropolitan Philadelphia, and a newly elected member of the Delaware Valley Council's board of directors.

Highway commissioner appointed for Iowa

Everett L. Shockey, trust officer of the Council Bluffs Savings Bank, Council Bluffs, Iowa, has been appointed to a 4-year term as highway commissioner for Iowa. He replaces Harold Teachout of Shenandoah.

For more facts on insert, use Request Card at page 18 and circle No. 343

Army engineer awarded medal by university

Brig. Gen. Wilmot A. Danielson was recently presented with the Marston Medal, awarded annually by Iowa State University, Ames, Iowa, to an outstanding engineering alumnus.

Gen. Danielson, a 1907 graduate in electrical engineering, served nearly 40 years in the Army, during which he was engaged in the construction, maintenance, and operation of army installations in the Philippines, Alaska, Texas, and Panama. He retired from the Army in 1946.

IRF highway award

The O'Farrill Highway Award, given annually to the outstanding student in the International Road Federation fellowship program, was recently presented to William J. Riddell, design engineer from Saskatchewan, Canada.

The presentation took place at a banquet in Milwaukee honoring the 44 foreign highway engineers who have completed a year of graduate studies in United States universities under the IRF program. Riddell attended Purdue University.

Johnson & Johnson names vice president

John G. Cappozzo has been named vice president of the Architectural Division of Johnson & Johnson Engineers-Architects, Inc., Chicago, Ill. Cappozzo, who was previously manager of the same division, will be active in new-business development for the firm.

CSI honors Plummer

Harry C. Plummer was made a fellow of the Construction Specifications Institute at its recent fifth annual convention in New York City. He has been secretary-treasurer of the group for the past six years.

Plummer is director of engineering and technology for the Structural Clay Products Institute, Washington, D. C., and secretary of the Structural Clay Products Research Foundation. He is the author of "Brick and Tile Engineering Handbook of Design," co-author of "Reinforced Brick Masonry and Lateral Force Design."

Rensselaer confers honorary degrees

Rensselaer Polytechnic Institute, Troy, N. Y., has conferred the honorary degree of Civil Engineer on alumnus Richard P. Gowdy, president and treasurer of the Industrial Construction Co., Hartford, Conn., in recognition of his achievements in engineering, business, and community affairs.

Frederick R. Kappel, president of the American Telephone & Telegraph Co., received the honorary degree of

H&L *Teeth that really dig!*

NEW RAPID-ADJUST

CAM LOCK RIPPERS



This new shank arrangement allows the operator to choose one of two shank angles, easily and quickly by simply moving cam lever to forward or rear position, no longer is it necessary to waste valuable man hours for angle changes. By reversing quick-change Flexpin type POINT a total of 4 ripping angles can be achieved.

WEAR PLATES have been used extensively on H&L Shanks, replacement of wear plates restores Shank to near new condition, increasing shank life several times over.

NEW RIPPER POINT NO. 36

ALL FORGED HIGH ALLOY STEEL, a one piece forging of newly formulated super steel; forging creates compact uniform grain flow—a newly devised heat-treating process, attains a uniform hardness from core depth throughout POINT. These points have a hardness ability to absorb extreme shock, and resist abrasive wear. Now setting new wear-life endurance records in all types of materials.

H&L TOOTH COMPANY
1540 S. GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

H&L pioneered the replaceable point, and for over 31 years have specialized in the manufacture of digging points, with a world-wide record of superior performance.

For more facts, use Request Card at page 18 and circle No. 275

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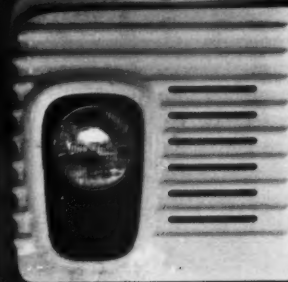
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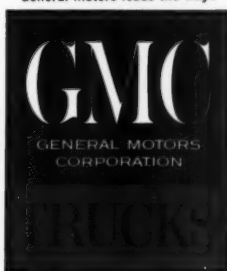
WHY GMC'S ARE THE
MOST ADVANCED
CONSTRUCTION
TRUCKS IN 20 YEARS



PULL

From 1/2-ton to 60-ton
General Motors leads the way!

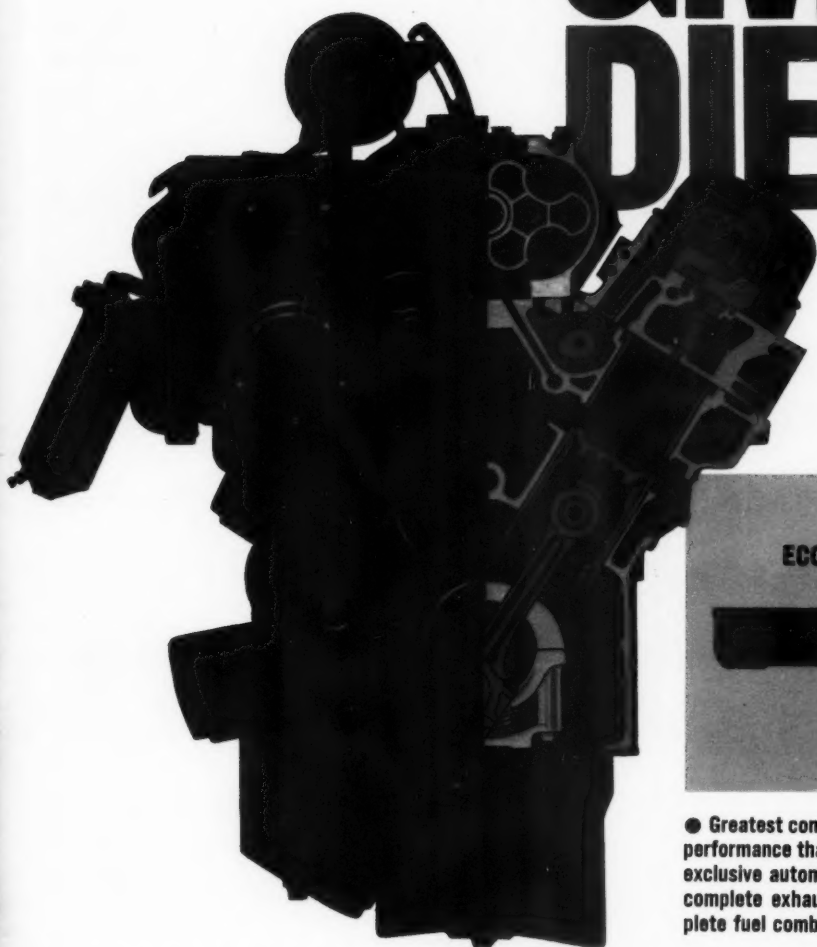
**THE
TRUCK
TRIUMPHS
OF THE
60's!**



GMC Truck & Coach—a General Motors Division—Pontiac, Michigan

GMC V-6 DIESELS

**SHORTEST,
LIGHTEST
AND LEAST
EXPENSIVE
TO OWN—IN
THEIR CLASS!**



You get rugged, compact construction . . . many inches shorter for more inside cab room, simpler servicing and full advantage of short BBC dimensions—lightest weight, up to 530 pounds less, to carry bonus payloads—two-cycle design for faster acceleration, smoother power, exceptional fuel economy and added life.

EXCLUSIVE ECONOMY RANGE GOVERNOR



Only GMC diesels have this economy range governor that positively regulates engine speed at the most efficient rpm for top fuel economy and longer engine life. Standard equipment on 4-wheelers.

BIG PULLING POWER! HIGH PERFORMANCE! 6V-71 GMC TRUCK DIESELS

MAX. TORQUE
604 @ 1200

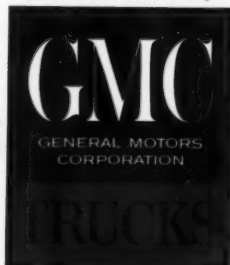
MAX. HORSEPOWER
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Ratings are at sea level and 60°F.

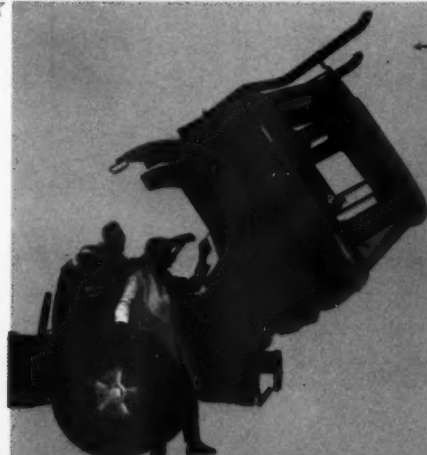
● Greatest combustion efficiency with maximum air intake from Roots-type blower ● Better high-altitude performance than naturally aspirated engines ● Save up to 5% on fuel, get up to 12 extra horsepower with exclusive automatic hydraulic fan ● Four exhaust valves for each cylinder (not just 1 or 2) assure more complete exhaust scavenging, give a cooler-running engine, lengthen valve life and provide more complete fuel combustion ● Replaceable dry-type cylinder liners are leak-proof, quick and easy to service.

**THE
TRUCK
TRIUMPHS
OF THE
60's!**

From 1/2-ton to 60-ton
General Motors leads the way!



GMC Truck & Coach—a General Motors Division—Pontiac, Michigan



← 218 hp. V-6 Diesel Engine is Right
Out In The Open with the cab tilted.
Other features of GMC steel tilt-cabs
are: 72" BBC and 52" front axle loca-
tion for big loads; biggest safety vision
you can get; sharper turning angles;
job-matched diesel power from 32,000
lbs. GVW to 76,800 lbs. GCW.

→ GMC's Biggest, Diesel-Powered
60-ton Tractor—DBW9000 Series
with 90" BBC and 28-inch front axle
location for biggest legal loads. Con-
ventional Ninety-Inchers, with V-6
diesels, are ideally suited to all con-
struction jobs from 30,000 lbs. GVW.



EXCLUSIVE GMC ENGINES ARE BUILT TO



Short, Stout Design! Low-Rpm Power! GMC V-6s have exclusive long-life strength. Deep-skirted block has extra-reinforcing ribs and structural superiority throughout. Full-power at low engine speed and shortest stroke of any comparable truck-built engines reduce power-robbing wear, add to greater fuel economy and provide the desired, higher performance.

Cooler-Running, Stronger, Bigger Valves... Everything For Longer Life!

1 Extra-long valve guides, integral with head, minimize stem exposure to burning gases and assure faster transfer of heat. **2** Positive rotation of both intake and exhaust valves (except 305A) give valves self-cleaning action to prevent sticking, pitting, warping, leaking and burning.

3 Valve stems are short and big diameter to practically eliminate distortion. Sodium-filled exhaust valves* more rapidly transmit damaging heat through the valve guides to the coolant. **4** Up to 176 gallons of coolant circulating every minute (over twice as much as many competitive engines) provide the flow necessary for life-prolonging heat transfer. **5** Hard, tough, special steel is used in the exhaust valve seat inserts of heavy-duty V-6 engines to withstand high temperatures and constant seating action. **6** Valve heads and ports are extremely large for better breathing. Special hard facing resists pitting, corrosion, fatigue and wear. **7** Wide bridge between valves provides added strength and big cooling areas for better heat dissipation. *(Except 305s)

HERE'S YOUR COMPLETE CHOICE OF EXCLUSIVE GMC V-6 GAS ENGINES

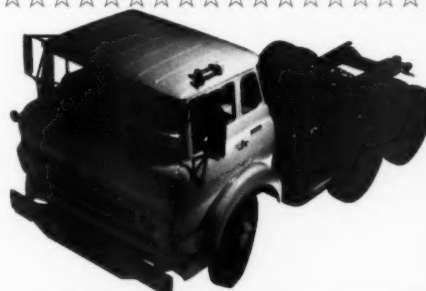
MODEL	GROSS TORQUE RANGE	MAX. HP.
305A	258-260 @ 1400-2200	150 @ 3600
305B	264-266 @ 1100-2000	150 @ 3600
305C & D	268-270 @ 1200-2100	165 @ 3800
351	308-312 @ 1400-2400	180 @ 3400
401	375-377 @ 1200-2000	210 @ 3400



Lower Maintenance Costs! Adjustments, repairs and replacements are easier and less costly with GMC engines. For example—spark plugs are conveniently located inside the V. Self-locking screws make valve lash adjustments a simple job. Most major parts are interchangeable between V-6 engine models, and several with Twin-Six engines. Expert service and all parts are readily available at GMC Truck Dealers located across the country.



Low Buying Cost! Low Owning Cost! That's the new GMC 105" BBC Conventional 6-wheelers with 105" BBC cab, 351 or 401 V-6s. Servicing is convenient with wide hood and roomy engine compartment. Easy-in-and-out conventional cab trucks start with choice of 34 pickup combinations and go up to 60,000 lbs. GCW tractors.



Out-Earns, Out-Pulls All Trucks In Its Class... GMC steel tilt-cabs with exclusive 275 hp. Twin-Six. These easy-to-service, easy-to-drive models with 72" BBC and 52" front axle placement are also available with GMC V-6 engines. Full line, 19,500 lbs. GVW to 76,800 lbs. GCW, cannot be surpassed on any construction haul.

FOR ALL THE PROFIT-FACTS, CONTACT YOUR GMC DEALER LISTED IN THE YELLOW PAGES OR

OUT-LAST, OUT-POWER OTHER GAS ENGINES!



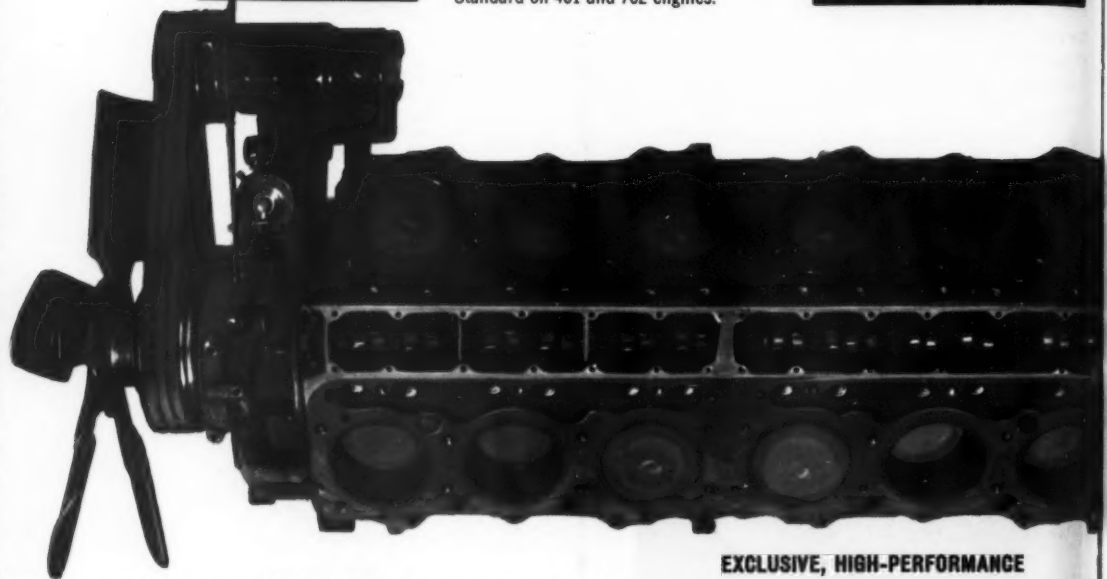
Greatest Pulling Power Of All! This 702 cu. in. Twin-Six gas engine produces the most usable power of any standard equipment engine. You get great reserve power at low engine speed to haul loads at part throttle under normal conditions . . . using reserve only for hills. You save fuel, reduce shifting up to 60% and get longer engine life.



← **Notice The Full 3-inch Extended GMC Skirt** for the most rigid, full crankshaft support. New compact design, extra strong inner ribbing and staggered cylinders all increase strength and rigidity, decrease costly wear and failures.



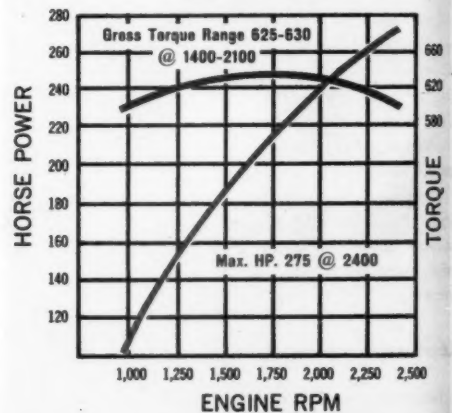
→ **Tamper-Proof, Positive Speed Control Governor!** This GMC patented hydraulic governor operates by direct oil pump pressure to accurately, reliably control proper operating speeds . . . adds to engine life. Standard on 401 and 702 engines.



Exclusive V-6 Power is standard in medium-heavy duty 90" Conventional along with easy-driving independent front suspension and easy-riding vari-rate rear springs on 4-wheel models. Ruggedly reinforced cabs with double-walls stand up on the roughest construction jobs. Heavy-duty models have the powerful Twin-Six.

VISIT ANY CONTRACTORS USING NEW GMC TRUCKS.

EXCLUSIVE, HIGH-PERFORMANCE GMC TWIN-SIX



Doctor of Engineering. Minoru Yamasaki, Birmingham, Mich., architect, was given the honorary degree of Doctor of Fine Arts.

Martin C. Dwyer, manager of the 1963 Construction Equipment Exposition and Road Show to be produced and managed by CIMA.



Road Show manager named by CIMA

Martin C. Dwyer has been appointed manager of the Construction Equipment Exposition and Road Show to be held in 1963 at the International Amphitheatre, Chicago. Dwyer was named to the post by the Construction Industry Manufacturers Association, which is producing and managing the exhibit.

The exposition is being co-sponsored by the American Road Builders' Association, The Associated General Contractors of America, the Associated Equipment Distributors, and the International Road Federation.

WRI elects president

D. W. Roberts, manager of sales, construction products, for the Kansas City (Mo.) plant of Sheffield Division, Armco Steel Corp., was recently elected president of the Wire Reinforcement Institute, Washington, D. C., at the group's annual meeting in White Sulphur Springs, W. Va.

Parsons appointment

The Ralph M. Parsons Co., Los Angeles, Calif., engineering and construction firm, has named Burton Taylor project development engineer. He will be in charge of the company's resources development and planning department.

Taylor's experience as a planning analyst includes site development and master planning on various industrial, community, and Air Force base projects.

Leonard appoints

Leonard Construction Co., Chicago, Ill., has appointed Ralph E. Meints, a partner in the Chicago engineering firm of Vern E. Alden Co., to its engineering staff.

Meints will work on special engineering and development assignments for Leonard.

Lehigh honors three

Lehigh University has conferred the honorary degree of doctor of engineering on the following: Charles H. H. Welkel, vice president in charge of research, Bethlehem Steel Co., Bethlehem, Pa.; Leonard P. Pool, president, Air Products, Inc., Allentown, Pa.; and Theodore R. Higgins, director of engineering and research, American Institute of Steel Construction, New York, N. Y.

Limestone group names

The National Limestone Institute, Inc., Washington, D. C., made several changes in its board of directors during the group's mid-year meeting.

New directors are: Burke B. Bayer, Bayer Construction Co., Inc., Manhattan, Kans.; Percy B. Ferebee, Nantahala Talc & Limestone Co., Andrews, N. C.; and C. C. McClinton, McClinton Bros. Co., Fayetteville, Ark.

Board replacements include the substitution of Harold C. Gorman, Russellville Stone Co., Russellville, Ind., for A. D. Gorman, Gorman Construction Co., Inc., Flemingsburg, Ky., and Mrs. Buford V. Everett, Everett Quarries, Inc., Plattsburg, Mo., for her late husband.

Robert M. Bridges, Consumers Co. Division, Vulcan Materials Co., Chicago, a former director, was elected an honorary director of the institute.

BuRec engineer assigned to U. N. team in Formosa

Charles W. Thomas, a hydraulic engineer at the Denver, Colo., Engineering Laboratories of the Bureau of Reclamation, has begun a one-year assignment with the United Nations on an 8-man team that will study the water resources of the island of Formosa. The Bureau of Technical Assistance Operations of the U. N. is sponsoring the study.

Thomas will advise senior Chinese engineers on Formosa in the development of hydraulic laboratory facilities

and in techniques of model design, construction, testing, and interpretation. He will also advise on methods of controlling sediment in reservoirs and canals, stabilizing channels and preventing scour, and in formulating an island-wide survey for sediment observations.

PCA district engineer

The Portland Cement Association, Chicago, Ill., has appointed Harvey J. Field, Jr., district engineer of its Vancouver, B. C., district office. He will be in charge of the association's field engineering and educational activities throughout British Columbia.

Field was formerly highway engineer in PCA's paving bureau. He succeeds L. T. Willoughby.



John Day Dam, Columbia River—Contractor: Montage-Halverson-McLaughlin & Assoc.

**"For a tough job like this,
WIDE-LITES are the best
floodlights available!"**

"Army Corps of Engineers specifications on the John Day Dam Project on the Columbia River calls for a lighting intensity of 3 foot-candles," writes Jim Rafferty, electrical superintendent for the contractor. "It's one of the toughest specifications in the business."

"We selected Wide-Lites," continues Mr. Rafferty, "because they are the best floodlights available for this type of work." There are 182 1000-watt Wide-Lites on the project, and an unusual application is made on the booms of the giant gantry cranes. Four Wide-Lites, hung on counter-balanced mountings, pivot so that their light is always aimed

at the work area as the crane operates.

Why does Mr. Rafferty believe Wide-Lites are best for big construction jobs? Durability is one reason. Since the job began in January, 1960, he has used Wide-Lites on skid-mounted towers which are towed by tractors across the rough dam site terrain—and not a single lamp has broken! And, of course, since one Wide-Lite does the work of two or more incandescent floodlights, fewer lights are needed.

Find out all the reasons why Wide-Lites are best for your lighting problem—just send the coupon. No obligation, of course.



Patented

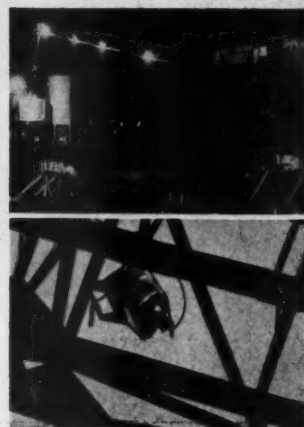
WIDE-LITE

HIGH EFFICIENCY FLOODLIGHTS

OUTDOOR AREA LIGHTS • VAPOR TITE MODELS • INDOOR WORK LIGHTS
• MOBILE WORKING LIGHTS • SPORTS LIGHTS • PROTECTIVE LIGHTS

In Canada: Wide-Lite Division, Wakefield Lighting, Limited, London, Canada

For more facts, use coupon or Request Card at page 18 and circle No. 276



Counter-balanced Wide-Lites on crane boom keep light aimed at work area.

.....
WIDE-LITE CORPORATION Dept. CA11
 P. O. Box 131 • Houston 1, Texas
 Please send me more facts on Wide-Lites for lighting a

 Name _____
 Company _____
 Address _____
 City _____ Zone _____ State _____



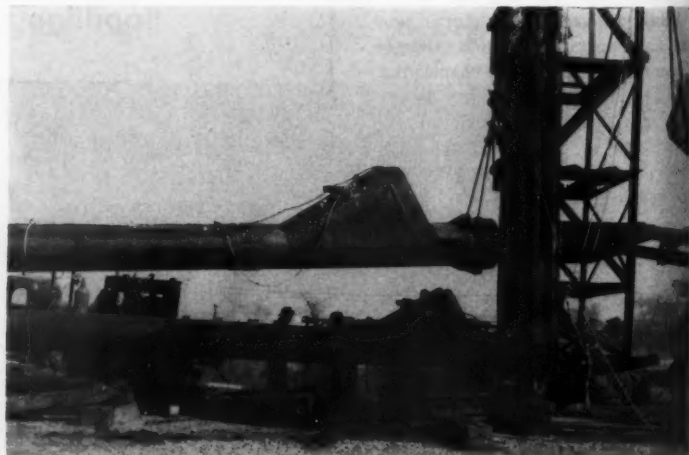
Manitowoc 3900 cranes installing sand drains along a section of the Bergen-Passaic Expressway in northern New Jersey work with Vulcan hammers to sink mandrels through a sand blanket and underlying material. A Hough H-120 Payloader fills a McKiernan-Terry hopper that will be raised and dumped to the special hopper attached to the casing.

Something new for

Sand is handled by rail and then by dredges for extra-long installations for roadway base



As the casing is extracted, the flap gate at the end swings free. It closes the end of the tube while driving is being done. Casings are 20 inches in diameter and 1/2 inch thick; the deepest drain depth is 135 feet. Almost 4 million feet of the columns is needed for 56,500 drains on 8 x 7-foot and 7 x 6-foot grid systems.



One of the mandrels is being lifted into place under the Vulcan driving hammer in the leads of one of the driving rigs. At the top is a special hopper arrangement that allows sand to be dumped into the casing but which closes tight when 100 psi of air is applied inside the casing during extraction from the ground.



(Additional photo on front cover)

fosand drains

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by DON TAYLOR, field editor

Sand drains placed to depths of 135 feet—some of the longest in New Jersey—are being used to stabilize 1.2 miles of the Bergen-Passaic Expressway. Sand for the drains and sand blanket is supplied principally by rail and emptied to a sump, and then is pumped from the unloading site to the fill area by hydraulic dredge pumps. With the installation of rail sidings and a special unloader, the contractor found an economical method of putting the sand where it could be handled effectively.

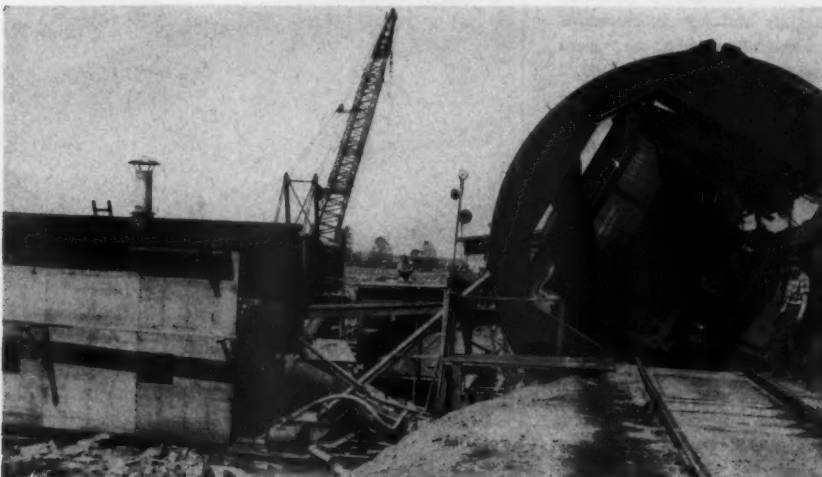
The \$6,800,000 contract for sand drains and incidental work is held by George M. Brewster & Son, Bogota, N. J. Brewster, which has had experience with sand drains on such projects as the New Jersey Turnpike and the Garden State Parkway, was the low bidder on several contracts along the expressway, including other sand-drain projects. The new highway is a part of Interstate 95 and State Route 80 and forms a connection between State Route 17 in Lodi and the George Washington Bridge. The expressway is expected to cost some \$65 million.

Approximately 4 million feet of sand columns is

(Continued on next page)



An efficient way of getting sand into place for the fill and for the tractor shovels to handle has been set up by the contractor. Most of the sand is being delivered by rail to contractor-built sidings. This one can hold 60 cars at a time.



The hopper cars, carrying 50 to 55 tons of sand, are turned over and dumped to a water sump by an Eastern Constructors car dumper. A 1,650-hp dredge pump picks up the sand-water mixture and sends it through a 16-inch steel pipe toward the sand-drain area.



At the halfway point along the line, a 1,750-hp booster pump rated at 10,000 gpm and 270 feet of head provides additional head to push the sand slurry along the 16-inch line to the job site. The total length of the pipeline was 4,500 feet.



At the end of the line, Cat D8 tractors move material from the pipe outlet for the sand blanket and for storage or use in the sand drains. Pipes are relaid or rerouted as the sand blanket begins to grow. Some of the sand required was obtained from Long Island Sound and trucked to the site.

the Vulcan
At the top
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air is ap-

ENGINEERS

AUGUST, 1961

45



per attached to the top of a casing. Each receiving hopper had trap arrangements that opened to admit the sand going in and were closed tight by air pressure as the casing was withdrawn.

After the casing was filled with sand, it was withdrawn slowly and 100 psi of air pressure was applied to the top of the sand column. The sand column was then left compacted in

place, ready to take the water from the surrounding material.

Operation of sand drains

Water from the soil adjacent to the drains is forced into and up the sand drains by the pressure of the sand blanket and the overburden on the underlying saturated material. Relieved of its excess water content, the once soft material settles and becomes rigid enough to support heavy fills. Initially, an extra amount of overburden is placed over the sand drains to insure good consolidation. After settlement subsides, the over-

While waiting for sand to build up at the outlet end of the 16-inch dredge pipe, one of the D8's is serviced by a fuel rig.

(Continued from preceding page)

to be placed in 56,500 sand drains. In addition to the sand-drain installation, other work in the area included the removal of unsuitable sanitary-fill materials and the relocation of Fort Lee Road in order to place sand drains under the existing roadbed.

The sand-drain method of construction was used in order to relieve the underlying unstable mud of its high water content. This condition, typical throughout the Jersey meadows, has been overcome successfully in the past by the use of sand-drain methods. Drains permit the early stabilization of such areas, especially where the depth of the material is so great that the cost of excavation and backfill would be prohibitive.

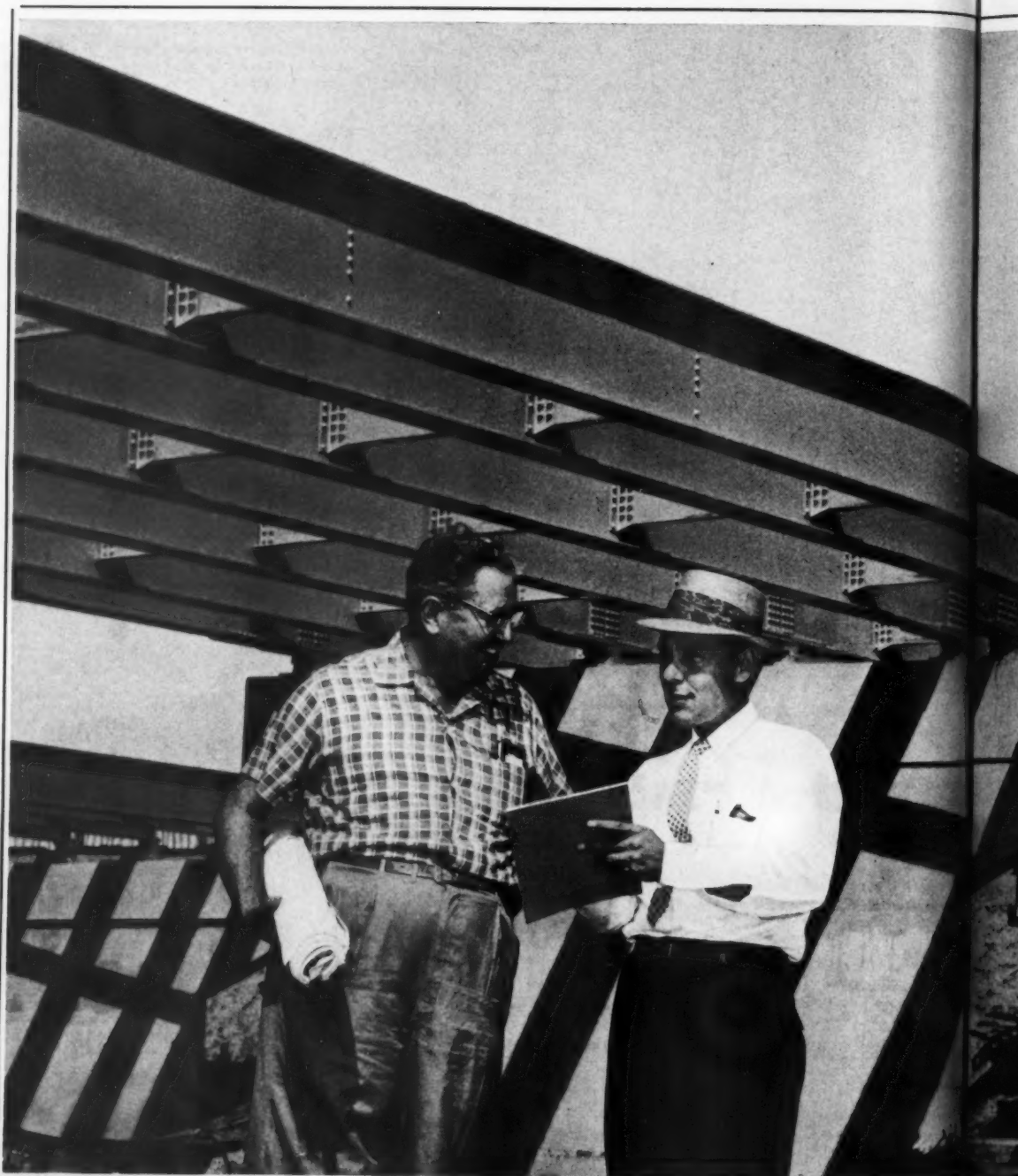
Before sand drains were placed, a layer of sand approximately 4 feet thick was spread over the entire area and graded to provide an even working surface for the driving equipment. The layout of the sand drains was done with two grid systems, one with 8 x 7-foot spacing and one with 7 x 6-foot spacing. After the drains were placed, a second blanket of sand averaging 3 feet thick was spread over the first blanket and the area was brought to an even grade, ready to receive the overburden.

Sand-drain installation

Following the grid pattern established on the first layer of the sand blanket, the sand drains were installed through the sand blanket to the required depth. Steel tubes 20 inches in diameter and 1/2 inch thick were driven to firm bottom by Vulcan hammers. Manitowoc cranes fitted with driving leads were used to drive the long tubes at the desired locations. Six 3900's were used for drains of average depth, while a 4000 and a 4500 were used for the deepest columns. The hammers were driven by two Ingersoll-Rand 600 and 900-cfm Gyro-Flo compressors mounted on the rear of each crane.

Material was kept out of the tube during driving by means of a hinged trap fitted to the end of the 20-inch casing. The trap fell open easily when the casing was withdrawn, leaving the sand in place.

While the tube was being driven, a McKiernan-Terry hopper attached to the lead was filled with selected sand. Six Hough H-120 Payloaders loaded the hoppers for the driving rigs. Each hopper was lifted and dumped into a special receiving hop-



An important Rieth-Riley project is the construction near Indianapolis of five bridges at the intersection of U.S. 52, Interstate 465 and Bypass 100. Here Miles Shookman checks service and delivery requirements with bridge superintendent H. P. Kunkler.



BY MILES SHOOKMAN
About the Author. Operating out of Indianapolis, Miles Shookman has the job of providing specialized service to construction contractors in his territory. A graduate of Indiana University, Miles is well qualified for this important assignment. He has been doing this work for much of the 15 years he's been with the company, and also at-

tended the Company's Sales Engineering School.

★ ★ ★
Rieth-Riley Construction Company, Inc., is a large, highly diversified contracting firm with headquarters in Goshen, Indiana. As "Contractor Representative" for American Oil Company, I work closely with Rieth-Riley to provide the specialized service needed for construction operations. This means visiting widely scattered

projects to make sure the company gets the right product in the right place at the right time—always. Specializing in highway, bridge and street projects, Rieth-Riley owns and operates a large number of complicated and expensive pieces of equipment. Years of experience has taught the importance of uniform maintenance practices and consolidated fuels and lubrication programs. That's why Rieth-Riley depends on American Oil.

burden is brought to grade and excess material is removed.

Place sand blanket

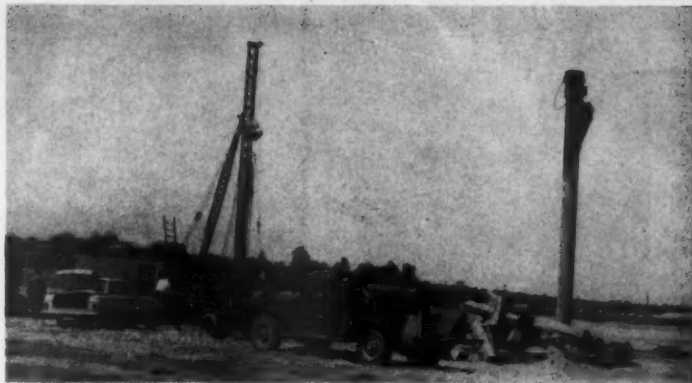
Two methods were used to place the sand blanket. Most of the material was placed by the use of hydraulic dredge equipment, but sand was also trucked to the job site.

To facilitate the placement of the hydraulic fill, the contractor laid sidings alongside the nearby Northern New Jersey Railroad, and installed a car-dumping apparatus, dredging equipment, and a 16-inch steel pipe from the unloader to the

fill area. The sand for this operation was brought by railroad car from a gravel pit near Wanaque, N. J. In a joint venture between Brewster and the Erie-Lackawanna Railroad, five trains of about 40 cars each ran a shuttle service from the quarry to the job site with 50 to 55 tons of sand carried in each car.

Two sidings were used to facilitate

Mobility for Lincoln welders needed in repair of the driving rigs and equipment is provided by Dodge Power Wagons, equipped with four-wheel drives and extra-duty tires for the job.



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Rieth-Riley's president, Blair Rieth and general superintendent Harold Bowen review highway construction progress and servicing requirements with AMERICAN's Miles Shookman.

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unloading the cars—a storage track that held up to 90 cars, and the track with the unloader, which was able to process up to 60 cars without reswitching. The unloader was an Eastern Constructors car dumper similar to the type used to load ore boats on the Great Lakes. Each car was turned upside down by the unloader, emptying into a pit that served as a sump for the main dredge pump. Water for the sump was obtained from a channel dredged from nearby Overpeck Creek to the unloading section of the railroad siding. A 16-inch steel pipe was laid 4,500 feet across the meadow to the fill area, where the outlet section was moved from time to time as the job progressed.

The sand and water mixture was drawn out of the sump by the main pump, a 1,650-hp dredge rated at 10,000 gpm and 270 feet of head. The mixture was pumped through the 16-inch pipe to a booster station halfway to the job site, then repumped by a 1,750-hp centrifugal pump rated at 10,000 gpm and 270 feet of head. The pumps were dredge type built by Georgia Iron Works and Morris Machine Works.

At the work site, the sand and water mixture was deposited a short distance from the end of the pipeline. Two Caterpillar D8 tractors moved the sand away from the outlet, making it part of the sand blanket or stockpiling it for distribution by Caterpillar DW21 scrapers and Hough H-120 Payloaders to other parts of the job.

Sand was also supplied from Long Island Sound; barges brought the sand to Bogota, N. J., and it was carried to the job site in trucks.

Noise and weather are problems

The sand-drain work, started in the fall of 1960, was abandoned when winter set in. The severe winter caused work to be delayed several weeks because of frozen sand; when operations resumed, however, long work hours helped to speed the sand-drain job, which was scheduled to be completed in early summer. The sand-drain rigs worked from 7 a.m. to 10 p.m. with no equipment stoppage during the noon hour. Only occasional strong winds or heavy rains caused delays because of the nature of the rigs and the foundation material.

The working hours would have been longer, but nearby residents demanded some relief from the noise

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For the same kind of service contact the American Oil Company office.



Caterpillar scrapers move the sand to areas of the blanket where it is needed. Driving rigs work on a sand blanket about 4 feet thick; another 3 feet of sand is placed after the drains are installed.

(Continued from preceding page)

of the driving hammers and the clamor of the rail unloading operation.

Major maintenance items

Two continual problems were the maintenance of the dredge installations and the driving equipment. The varying loads of sand and water placed extra demands on the dredge pumps and their driving mechanisms. Breakdowns were kept to a minimum by a steady maintenance program.

Another maintenance problem was the repair welding of the driving rigs and the driving equipment. The most difficult part of this operation was

getting the welding equipment to the rigs as it was needed. Mobility was obtained by using Dodge Power Wagons with 4-wheel drives and heavy-duty tires. Each Power Wagon was equipped with a full set of Lincoln welding gear that remained on the wagon at all times. The welding machines, 200 to 300 amp, were supplied by Lincoln.

Settlement-recording instruments

The contract required installation of two types of instruments to measure the degree of settlement and compaction of the base material. These were piezometers and settle-

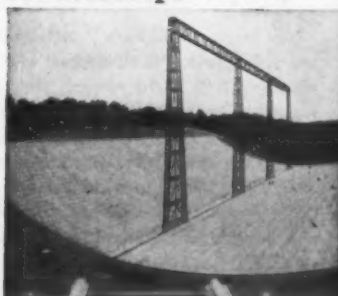
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Erosion control, again, in this gigantic radio telescope near Danville, Ill. The entire 400' x 600' basin of this great earthen bowl is lined with Careymat, preserving the precise earth contours required to trap and record signals from remote stars.

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Careymat is ideal for water containment in ponds, reservoirs and canals. This partially-filled basin is one of the "Great Lakes" in Freedomland, U.S.A. More than 420,000 sq. ft. of Careymat line these lakes, holding 20,000,000 gallons of water.

Fast, simple installation: Highway maintenance crew spiked flexible Careymat sheets to the slope, overlapping top and bottom. Sides were butt-jointed and sealed with batten strips. The perimeter of the entire installation was turned down and anchored in a 12" trench and backfilled. The surface was then painted with Carey Fibrated Aluminum Roof Coating.

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CONTRACTORS AND ENGINEERS

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A channel cut from nearby Overpeck Creek to the railroad siding supplies water for the dredge pump. Since this was a sanitary-fill location, the contractor had to maintain access to it by building a small bridge for the refuse trucks.

ment gages, installed at predetermined locations under the sand blanket.

The piezometers, 102 in all, were installed by the Joy Drilling Co. of

Fastest in 30 Yrs



Symons steel-ply forms provide record forming speed on big motel job

Ludwig Zahn, contractor on the new Holiday Inn, Mansfield, Ohio, reports the Symons Forming System provided faster pouring and stripping than any he has used during his 30 years in construction.

Particularly important was the king-stringer method which the contractor and the Symons engineering department devised to form the deck of the structure. King-stringers constructed of 2 x 4's bolted to 2 x 10's were 8 ft. on center. In between this were 4 x 4's supported by shores. Regular



View from "down under" showing stripping procedure. Note work space available with this type of slab system.

4-foot panels were then laid on the stringers and tied together with a Symons bolt and wedge in the center of each panel. To strip, they simply removed the 4 x 4 with its shoring and pulled down the panels. The stringer was left in position as support shoring for the required length of time.

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MORE SAVINGS FROM SYMONS

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New York. Twenty were installed before placement of the sand blanket and 82 after. Settlement gages, consisting of vertical sections of 2½-inch steel pipe welded to a 36-inch-square base plate, were installed in the fill at 201 locations to record the settlement of the original ground. The pipes were made long enough to extend from the original ground to a reference elevation near the surface of the overburden.

Overburden to follow

The sand blanket and drains will be covered with overburden material supplied and placed under another Brewster contract on the expressway. This material is to be carried from a rock and earth cut area approximately 2 miles east of the sand-drain project. The fill material will be moved from the cut area by a Barber-Greene conveyor system.

Personnel

The project manager of the work was Earl Hoy, who was assisted by Richard Loew, resident engineer. John McAndrew was office engineer; Pete Berzina, general superintendent; and Ken Sterling, superintendent of the sand-drain construction.

Paul Shidowski was the New Jersey State resident engineer. This section of the expressway was designed by Parsons, Brinkerhoff, Quade & Douglas, engineers of New York City.

THE END

Oliver appoints

Huitt L. Lawhead has been appointed sales manager of the Kansas City branch of Oliver Corp., Chicago, Ill. He has been succeeded as sales manager of Oliver's Columbus, Ohio, branch by H. Paul Brown.

Movie demonstrates lift-slab building

"Concrete in Motion," a 16-mm color film in time-lapse photography showing construction of a 7-story precast, prestressed lift-slab apartment building—Everett House in Palo Alto, Calif.—has been produced by its designers, Wilsey, Ham & Blair, engineers and planners, of Millbrae and Los Angeles, Calif.

The 12-minute movie, with sound narrative, may be obtained free for showing to builder and developer organizations by writing to Jack E. Van Zandt, vice president, Wilsey, Ham & Blair, 111 Rollins Road, Millbrae, Calif.

Blueprint reading subject of new book

A new book entitled "Blueprint Reading: Interpretation of Architectural Working Drawings," has been published by Prentice-Hall, Inc.

The 129-page text, which treats the important elements that comprise a set of blueprints—architectural and structural plans, elevations, cross sections, wall sections, and enlarged detailed drawings—is organized into 12 units, each designed to cover a particular phase of blueprint reading in a class period.

Each unit contains a short intro-

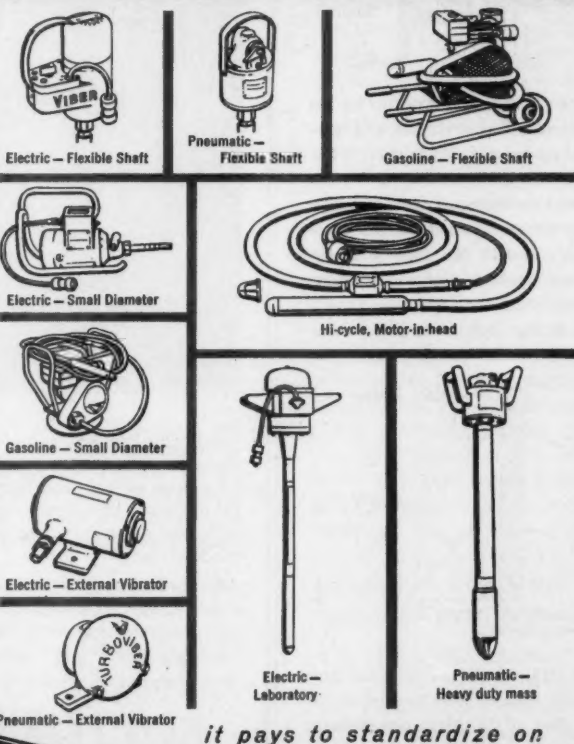
ductory statement, technical information consisting of study notes with numerous illustrations, cross-reference questions with answers keyed to the back of the book, and an assignment on the reading and interpretation of a blueprint. Featured are sets of architectural blueprints of a 2-story fireproof building, together with structural plans. A glossary of work terms is also included.

The book is available from the publisher, Englewood Cliffs, N. J. Price per copy is \$6.65.

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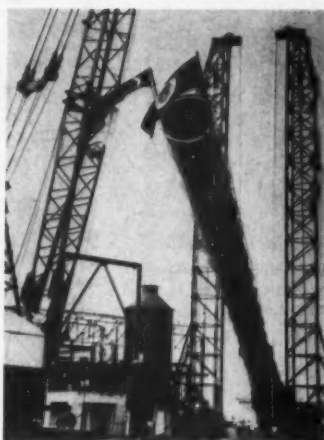
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Pile frames fill in for gin poles

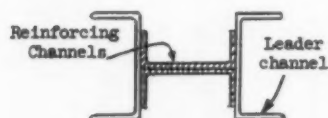
Two pile frames are used as gin poles during erection of this 45-metric-ton crude tower at Shell Refining Co.'s Grass Roots Refinery on the island of Pulau Bukom, near Singapore. The Lummus Co., Newark, N. J., is engineering and constructing the project.



Pile frames were used as gin poles to facilitate erection of a 100-foot crude tower and two 200-foot heater stacks during construction of Shell Refining Co.'s Grass Roots Refinery on the island of Pulau Bukom 5 miles south of Singapore.

Lummus Co., Newark, N. J., general contractor on the project, began the hunt for pile frames as arrangements were made to have the 45-metric-ton crude tower and the 45 and 60-ton heater stacks arrive at approximately the same time. Two frames were found that could be leased, one for four weeks, the other for three. But since the capacity of each frame was rated at only 18 tons, the Lummus construction team and the local pile-driving contractor had to redesign the pile frames and rigging to carry 30 tons. Here's how it was done:

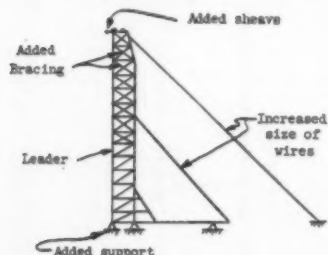
The leader guiding the hammer was designed as the main structural



compression member, built up by the addition of channel shapes and supported by a beam at the bottom of the pile frame.

To ease compression and bending stresses in leader and structure, bracing was added to the upper four 14-foot frame sections and the structure was guyed.

The lifting head was then reinforced and a sheave added to give an



almost straight pull to the load line. The main sheaves were located on the center line of the main compression member, formerly the leader of the pile hammer.

Since the hoist was rated at only 4½-ton pull on each winch, it was necessary to change the rigging. Two bridle blocks each carrying six parts carried the load line. The load line was

looped around the lifting lug, free to move on the lug and attached directly to the bridle blocks guided by two sets of three sheaves on the lifting head. Thus each winch was capable of lifting 27 tons, and the hoist could handle 54 tons. Each frame was tested to 45 tons, and the maximum pull of the winch was tested to be 7 tons.

Both the heater stacks were erected with the use of the pile frames. However, a wait for the arrival of the second pile frame would have delayed erection of the crude tower, and it was decided to use one reinforced pile frame and the 35-ton Lima that was guyed during the operation.

THE END

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were burning 40 to 45 gallons of fuel a day. Their 3-71 "Jimmy" has cut this to only 15 gallons of lower-cost Diesel fuel.

South Jersey Construction have found their GM Diesel powered equipment more economical, say this about its performance—"We let the GM Diesels go five months without attention, merely changing lube oil as we go. The equipment with GM Diesels never seems to

lose power. Acceleration is snappy and there's plenty of reserve power."

If that's the kind of productivity and performance you'd like from your equipment, specify GM Diesel when you buy or repower. There's a model to fit nearly every type of construction equipment. For details, see your GM Diesel Distributor. He's in the Yellow Pages under "Engines, Diesel," or write for more information.

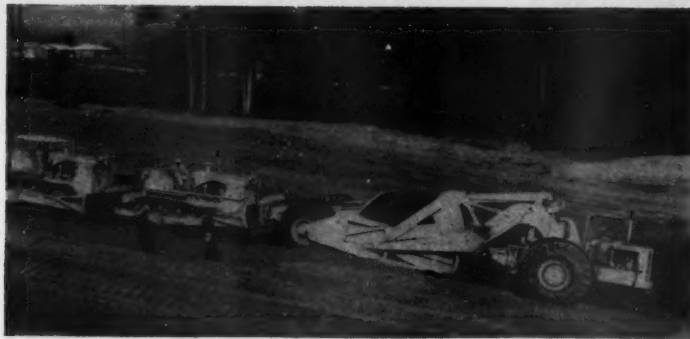
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TAKING PART in a tandem push-loading operation supplying fill for a 2.9-mile sector of Interstate 64 between Ona and Milton, W. Va., is an International Model 295 Pay-scraper owned by Howard Price & Co., Huntington, W. Va. The firm is moving 2,500,000 cubic yards of material, with cuts to 60 feet and fills to 55 feet, and expects to finish its part of the job by September. Twelve International rigs—two TD-25 crawlers, two Model 295 Payscraper units, four Model 65 Payhauler trucks, and four TD-24 crawlers—are working on the job.

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"The Trojan with the GM Diesel is a fast-moving, highly maneuverable piece of equipment that seems to be all over the yard at one time," says Charlie Young, Plant Manager for Young Bros. Contractors, Waco, Texas.

Young Brothers have used this Model 154 Trojan Loader with a "3-71" GM Diesel since March 1959—are very pleased with its performance and productivity. The unit stockpiles and serv-

ices an asphalt plant and crusher—moves up to 1200 tons per day.

"It does the work ordinarily requiring two pieces of equipment, thereby saving us the investment and upkeep of a second unit," says Mr. Young.

That's the kind of profit-making productivity Young Brothers have come to expect from their "Jimmies." They bought their first GM Diesel powered unit in 1946—now operate 22 GM Diesels.

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New Goodrich film on Niagara project

■ The B. F. Goodrich Co., Akron, Ohio, has released a 25-minute, 16-mm black-and-white film, "A Report on the Niagara Power Project."

The film gives a full description of the \$720 million project, with special attention to the giant penstock installation and excavation procedures in the conduit and other areas. It also describes services performed on the project under the B. F. Goodrich Unified Contractor Program.

The movie, which is available to construction, contracting, and engineering groups, may be obtained through zone and district offices of The B. F. Goodrich Co., and from the company's headquarters in Akron.

PCA wins safety award

■ The Tennessee District of the Portland Cement Association, Chicago, Ill., has received the Alfred P. Sloan Award in recognition of a 5-day-a-week rush-hour radio traffic-roundup program on Nashville Station WLAC. A 5-minute report of daily highway fatalities is followed by safe-driving tips.

The award, one of the highest offered to commercial sponsors of safety programs, was made to district engineer John L. Feagin in recent ceremonies at the Waldorf Astoria Hotel in New York City. It climaxed a series of local, regional, and national contests sponsored by the National Safety Council.

Standard specifications for federal road work

■ A new edition of "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects" has been published by the Bureau of Public Roads, Washington, D. C.

The 371-page book, intended primarily for use in the construction of federal road and bridge projects under the direct supervision of the bureau, is identified as FP-61 and supersedes the 1957 edition commonly known as FP-57. Several changes have been made to provide up-to-date specifications for those items of work and materials and construction methods that are generally applicable to direct federal highway contracts.

The publication can be obtained from the Superintendent of Documents, U. S. Government Printing office, Washington 25, D. C., at \$2.25 per copy.

Kennedy's Van Brush moves to new quarters

■ Kennedy's Van Brush Mfg. Co., Inc., Kansas City, Mo., is expanding into new and larger quarters at 2748 McGee Trafficway, Kansas City.

The new building contains approximately 25,000 square feet of manufacturing and warehouse space.

The company manufactures all popular types of rotary broom sweepers, and drag broom levelers used by builders of blacktop roads.

ENGINEERS

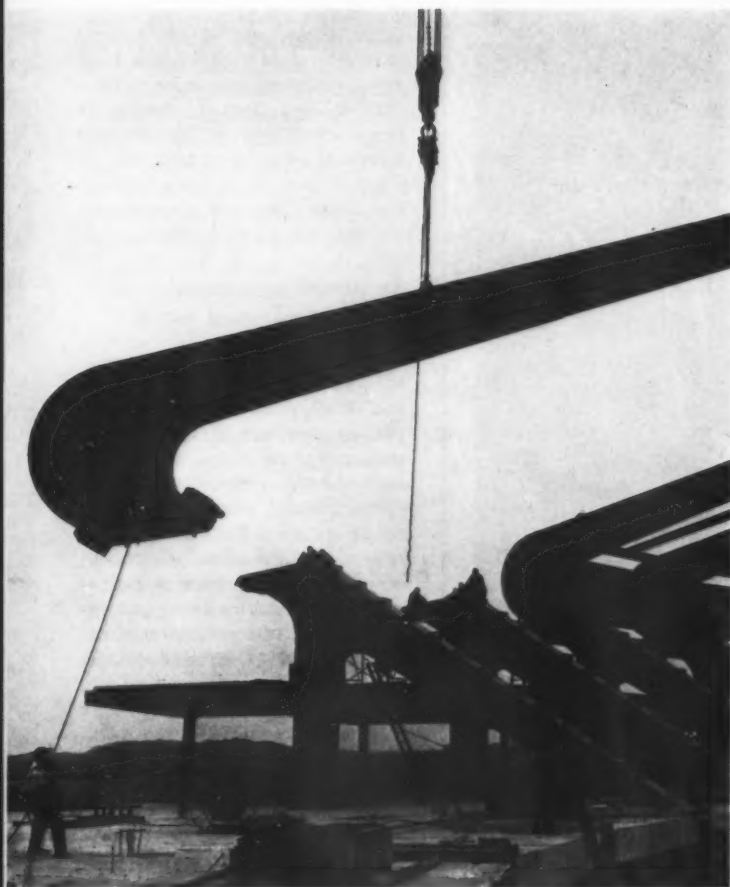
AUGUST, 1961



Ways of handling concrete and steelwork for the new municipal stadium in Washington, D. C., vary from day to day for crews because of the complexity of

the circular structure with its modern facilities. A big job is the setting of the "7"-shaped girders that carry the upper-stand seats and the roof.

Custom forming for a stadium



A main rib for a roof section is guided into place for field welding. Steel risers welded to the girders will be capped with precast-concrete risers to support seats in the upper stands.

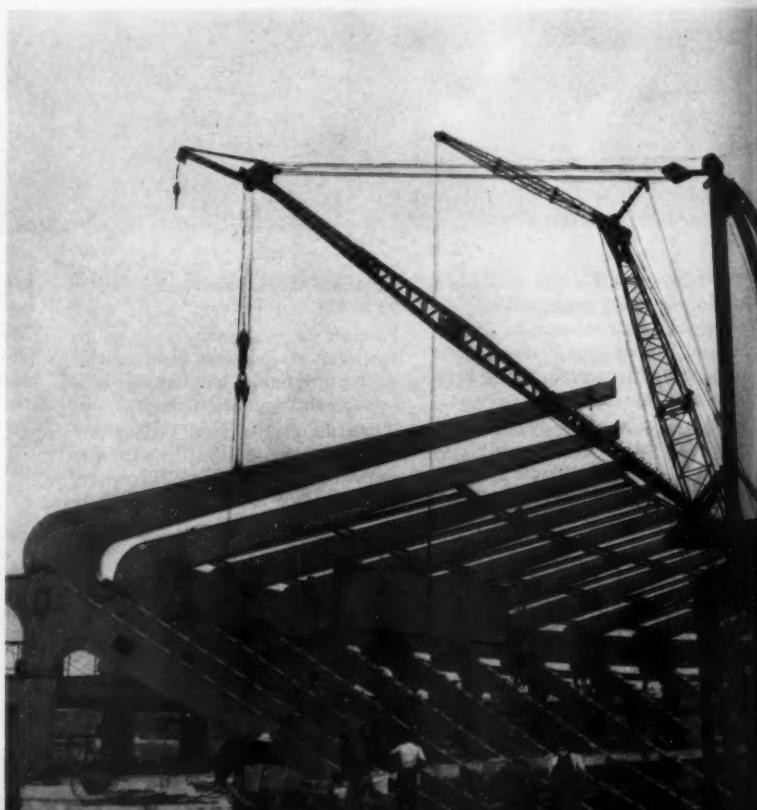
A 750-foot-diameter structure as much as 135 feet high, having sections in which it is almost impossible to find a square corner or a uniform floor height, calls for some unusual techniques. They're being provided by McCloskey Co. of Philadelphia and Washington, which holds the initial \$14.3 million prime contract for the \$22 million municipal stadium for Washington, D. C.

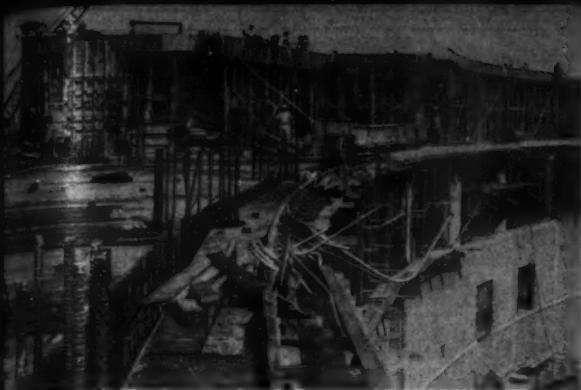
McCloskey's job is made even tougher by the deadline that hangs over the job—the opening of the professional football season, October 1. Under heavy pressure from civic groups, city administrators, sports fans, and even the federal government, the prime contractor and his

five principal subs have thrown every resource of men, equipment, and materials into the work to make up for delays caused by one of the area's worst winters. The result is a beehive of activity at the site, with steel erection, concrete forming, electrical and mechanical work, and even land preparation and demolition going on simultaneously and noisily in the middle of one of the city's principal highway intersections near the banks of the Anacostia River.

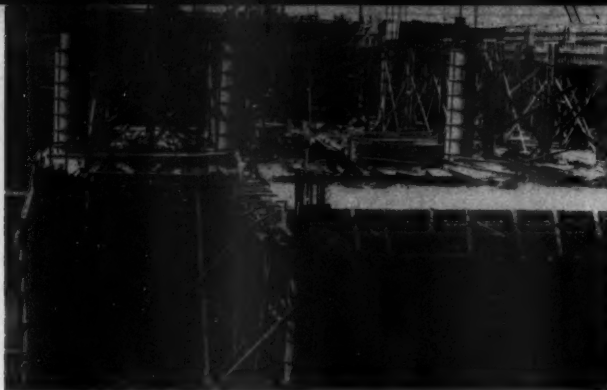
McCloskey Co. is building a concrete and steel structure that will rate with the nation's biggest and best equipped sports arenas. It will seat about 42,500 fans for baseball, over 50,000 for football, and many more

As an upper rib section is set by the tower derrick, a main box structure is being placed between haunches by a 50-ton crawler crane. A total of 66 box girders, formed of 1 $\frac{3}{4}$ x 30-inch flange plates with double web plates of $\frac{3}{8}$ -inch steel, is being supplied by Bethlehem.





Forming for the upper-level passageway is of conventional plywood sheets, carried on adjustable joists that are supported by double 4 x 4 posts. The edge beam, right foreground, is 18 inches wide x 2 feet 6 inches deep and is cast integral with the deck.



Two methods are being used to form columns. At left, job-built galvanized-steel forms are used for the interior supporting columns. Below, Sonotubes are used in areas where columns will be masked by curtain walls for offices, refreshment stands, and other facilities.

for special events. A special feature will be a 6,000-seat grandstand section mounted on rails sunk into the playing field so that it can be moved to accommodate football or baseball field layouts.

Cantilevered beams

Practically the entire seating section will be carried on cantilevered concrete or steel beams, as will the roof, so that there will be no posts of any kind to obstruct the view of spectators. Gently sloping ramps are designed for possible later installation of moving stairways. A 62-foot-wide roof will cover the entire upper section of the seats, with its inner edge as much as 135 feet above the playing field. Six main entrances will provide access to a 40-foot-wide main concourse around the entire perimeter of the building, and some 66 passageways will lead from this concourse, at outside ground level, to interior aisles or to ramps serving the upper tier of seats.

The building will provide almost two blocks of space for refreshment stands; a 10,500-square-foot kitchen

area; 13,000 square feet of storage space; a restaurant; more than 5,000 square feet of space for team personnel; 24 rest rooms for spectators; and lavish quarters for representatives of the press, radio, and television.

The plans also call for a parking area that can accommodate 12,500 cars, 100 buses, 200 taxis, and 1,000 official cars. The parking lots, all to be within a 5-minute walk of stadium entrances, are being built under other contracts. They will be supplemented by a helicopter landing pad and provisions for access by excursion boat on the Anacostia River.

The playing field will be depressed an average of about 15 feet below outside ground level, and the lowest rows of seats will be carried on cast-in-place concrete beams. The remainder of the lower stands will be carried on cantilevered concrete beams tied back to two rows of columns near the perimeter of the stadium.

Because the site is on a low tidal flat, less than 14 feet above mean water level of the Anacostia, and much of the 145-acre site is filled-in

land, the entire structure is carried on piles. A total of 3,898 steel 10 BP 57 H-piles was driven by McCloskey while other site-preparation activities, including demolition of some temporary office buildings, were going on. The piles are driven in clusters under the location of each supporting column that radiates outward from the inner edge of the seats to the perimeter of the building. Most piles were driven to depths of 55 feet to firm bearing in hard sand.

Pile clusters are capped with an average of 3 feet of reinforced concrete and tied to each other in line from the outer perimeter toward the

center by 2 x 2-foot concrete grade beams to take care of lateral thrust. Piles driven on the outer perimeter are placed on a 1 on 3-inch batter for additional resistance to thrust.

Reinforced-concrete columns

The main support of the structure is a row of 66 heavily reinforced circular concrete columns, 46 inches in diameter, placed in a 80-foot ring inside the outer perimeter wall. Secondary support is provided by another ring of 66 round columns, aligned with the outer edge. Smaller circular reinforced-concrete columns, averaging 32 to 36 inches in diameter, serve

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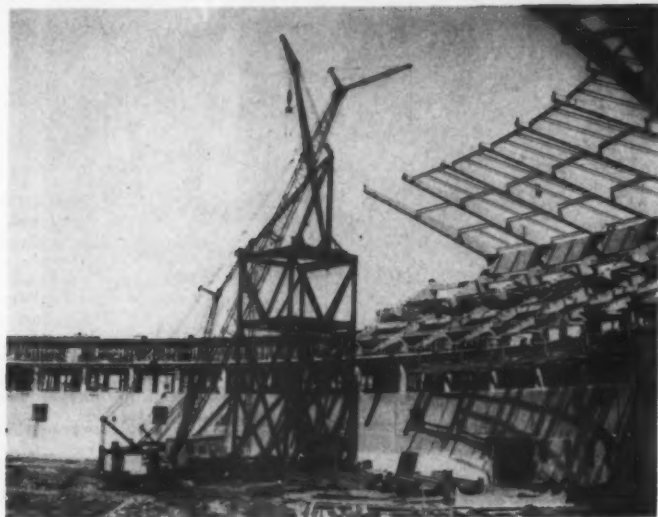
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(Continued from preceding page)



as supports between floor levels in the concourse, ramp, and aisle areas.

Floors on the various levels and on the ramps are supported by steel girders that vary in size, depending on span, but that are in general 18-inch WF I-beams. Floor slabs are 8 inches thick, and concrete edge beams—2 feet 6 inches in depth and 18 inches wide—are cast integral with the slabs.

Bethlehem Steel uses an 80-foot-high stiffleg, with 90-foot boom and 15-foot jib, to handle erection of the big girders. The lower section extends more than 90 feet to carry seats. The knuckle section supports the upper section, which extends 70 feet.

Forming problems

Forming of the floors and columns proved to be the most exacting work for the contractor, since the ramps are on a constant pitch and the upper aisles and walkways not only curve but also vary in ceiling height. In addition, curvature of the structure makes the width and length of the slabs vary considerably.

McCloskey's solution has been to use Spanall adjustable joists joined to 2 x 10-inch wood joists to carry the 5/8-inch plywood sheets for the decking. Joists are supported by 4 x 4 posts held together by Elisco clamps so that they can be adjusted to proper heights to meet required slopes and curvatures. These posts are set in some areas at spacings of less than 1 foot on centers to permit accurate adjustment of the level of the floor to be cast. Floor-to-ceiling height in all ramp and passageway areas is 15 feet.

On the outer edge, where curvature is greatest, McCloskey's carpenters have developed a set of curved filler pieces that can be placed as needed to achieve proper results.

Two methods for columns

Columns are being formed by two methods—in job-built galvanized-steel circular forms and in Sonotubes.

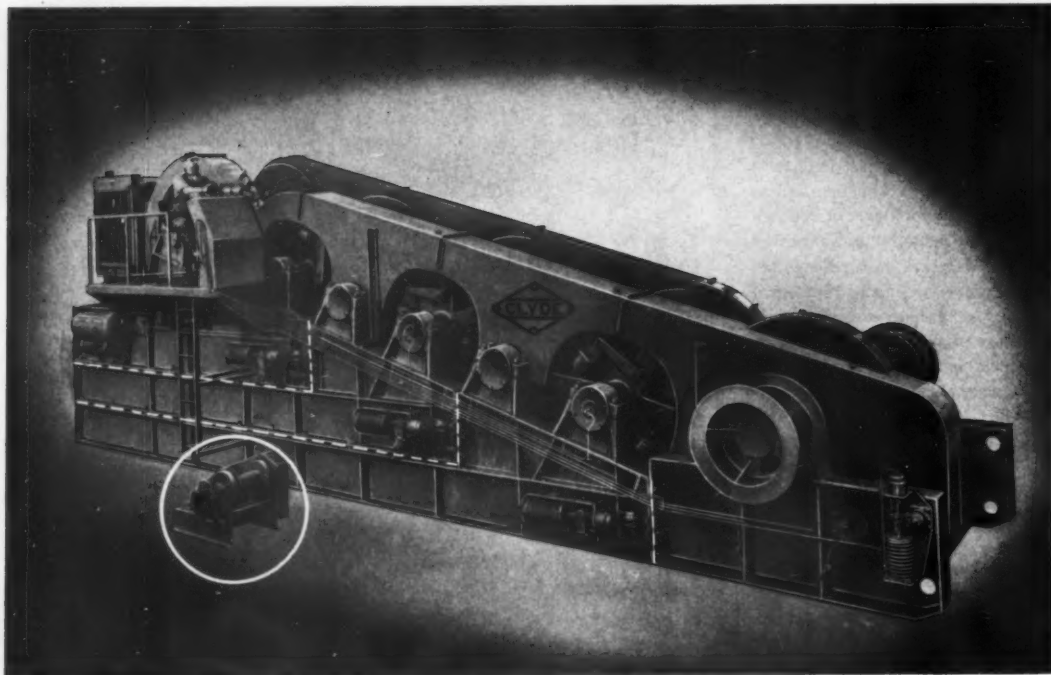
The metal forms are being used in areas where the columns will be exposed; the paper tubes are being used where the columns will be enclosed by concrete-block curtain walls, or otherwise concealed, so that finishing work will not be a requirement.

Concrete is supplied to the job by PDN—a McCloskey subsidiary. Specifications call for a 6-bag mix, with a 3,000-psi strength at 28 days. Concrete is vibrated as it is placed, and the resultant finish is good enough so that little final rubbing or other finishing work appears to be necessary.

Roof support

The most spectacular part of the work now in progress is being done under a subcontract by Bethlehem Steel, which is placing 66 huge box girders that will carry the roof structure and the upper-stand seats.

The girders, formed of 1 3/4 x 30-inch flange plates, with double web plates of 5/8-inch steel, are shaped almost exactly like a figure "7" that leans slightly backward. The upper end of the "7," which will carry the



Which one of these two Clyde Quality Hoists is Portable? *

The operator of the Clyde Frame-12, 4-Drum Erectors Hoist is 'master of all he surveys!' Gentle, but responsive, controls at his fingertips safely handle the 42,000 pound line pull. Even on the 10th layer or with 3,000 feet of cable on the drum this unit has a 30,000 pound line pull and a 25,000 pound pull at 36 feet per minute on the 2-drum bull wheel swinger.

It was designed and built for Harris Structural Steel Company, Inc. of New York City, for use on the Brooklyn-Narrows bridge.

The hoist is sectionalized so that it can be used as a 2-, 3-, or 4-drum unit. Height and width both exceed 12 feet and it is almost as long as a city lot is wide . . . 39 feet, 3 3/4 inches! Total weight is slightly more than 61 tons ! !

***BOTH OF THEM!** Though dramatically different in size, the two Clyde Hoists shown in the illustration above are both portable.

The Frame-12 Hoist is thought to be the largest portable construction hoist in the world. Portability is not the only common denominator of the two hoists shown. Both proudly carry the Clyde trademark, assurance and acceptance of the finest engineering, quality workmanship and rugged construction that have made Clyde hoists famous around the world. The smaller hoist? It's a Clyde Frame-3 Hoist with a 3,000 pound line pull . . . all muscle, all might . . . all Clyde!

Give a Lift to your project schedule with a Clyde Hoist

Write for Bulletin 34



Established 1899

CLYDE IRON WORKS, INC.

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HOISTS • DERRICKS • WHIRLEYS • BUILDERS TOWERS • UNLOADERS • CAR PULLERS •

For more facts, use Request Card at page 18 and circle No. 294



A workman disconnects erection hitches from a lower rib section.

CONTRACTORS AND ENGINEERS

roof, projects a total of 70 feet from the knuckle formed at the base of the figure. The lower section extends downward and outward more than 90 feet to carry the seats.

The huge girders were fabricated in three sections—the upper cantilever, the knuckle or haunch, and the lower section. The largest of the sections weighs more than 40 tons. All sections were made at Bethlehem's Pennsylvania plant and shipped by rail and truck to the site.

For erection, Bethlehem is using a 35-ton stiffleg derrick, carrying a 90-foot boom and 15-foot jib, which works from an 80-foot-high steel platform. To assist the stiffleg, Bethlehem brought in two Lima 50-ton crawlers. The work sequence calls for the lower part of the girder to be placed, then the 6-foot-deep knuckle, then the upper section, as field welds are made.

Seats in the upper stands will be carried on steel risers welded to the girders, which will be capped by pre-cast-concrete risers.

The heavy girders are supported at one principal point, 18 to 43 feet below the knuckle, by a 30-inch x 3-foot 6-inch welded-on box section that is tied into a steel rocker plate atop the main concrete supporting columns. The girders are set 35 feet apart on the perimeter and tied by box stiffening struts 24 inches wide and 8 feet deep.

Grandstand moves on tracks

The 6,000-seat movable section will be 350 feet long and 60 feet wide, carrying aluminum seats on a cantilevered steel frame that will rest on a 100-pound rail on the edge at field level and on a similar track hung on a projection of the building wall on the building edge.

The section will be capable of being towed by a tractor for a distance of 351 feet around the edge of the playing field from its normal position behind the left side of home plate to a position parallel with the playing field for football.

When this is done the whole section will be jacked up off concrete pads (each pile-supported on the field side), wheeled trucks will be placed on the track, and then the whole assembly will be moved. The

(Continued on next page)



Curving ramps and heavy knuckles of box-girder supports for roof and upper stands on the south side of the stadium give a good idea of what the contractor was up against in forming concrete and placing steel for the \$22 million structure.

WORTHINGTON COMPRESSOR NEWS:



MONO-ROTOR PROVEN...WARRANTY QUADRUPLD

The new line of Worthington Mono-Rotor compressors has gained extensive field experience with outstanding success. Performance has been so successful, in fact, that Worthington has lengthened its warranty period from 3 months to one year. It is the first major construction industry compressor manufacturer to do so.

Mono-Rotor units have proven themselves in widespread areas over the last 3 years. They are in locations ranging from New York City to Hawaii—from Alaska

to Argentina. Service conditions have ranged from the intermittent use in winter and summer to three-shift use for months at a time.

What makes the Mono-Rotor compressor so dependable? It is extreme simplicity.



NEW 125' MONO-ROTOR BLUE BRUTE

It actually has 63% less parts than its two-stage predecessor. The Mono-Rotor has just one stage, one rotor, two bearings, no gears and no oil pump. No other compressor design is so simple.

The new Worthington Mono-Rotor compressors have other benefits, too. They

are 20% lighter in weight and are designed for improved towing and tracking. The 3rd wheel is standard equipment for easier handling on the job. It runs all day on a tank of fuel. There's an engine-saving clutch and many other features.

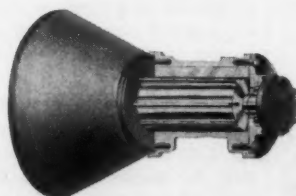
The Mono-Rotor can now be ordered in the 85', 125' and 250' sizes. See it... rent it... or buy it at your Worthington dealer listed in the Yellow Pages under "compressors". Or write Worthington Corporation, Dept. 60-39, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.



PRODUCTS THAT WORK FOR YOUR PROFIT



An intermediate box strut is field-welded to the main rib by a workman. Note the column pin-connected to the bearing shoe. All tension welds are inspected by radiographic instrument.



MONO-ROTOR: 1 STAGE...1 ROTOR... 2 BEARINGS... NO GEARS... NO OIL PUMP

For more facts, use Request Card at page 18 and circle No. 285



On the playing-field area, support for an outer track of the movable stand section is in place. This will carry a 100-pound railroad rail. The other track will be mounted on the projecting edge of the building, right, 60 feet inside the outer track. The stand section will have wheeled trucks so that when jacked onto the rails it can be towed 351 feet.

(Continued from preceding page)

space left empty by the move can then be filled in with temporary stands to increase the over-all seating capacity.

The track on the field side is supported on its own piles and on a 30-inch-wide concrete cap, flush with the field level, and 4 feet 3 inches thick above the pile caps.

Big force at work

In addition to more than 600 men now at work, the contractors have moved an impressive array of equipment onto the crowded site. It includes, in addition to Bethlehem's crawlers and stiffleg, a Lima 85-ton, a Lorain 50-ton, a P&H 60-ton, and an American 3/4-yard crawler; a P&H 30-ton truck crane; two Gradalls; five loaders of various makes and capacities; ten 7-yard dump trucks; and numerous compressors, smaller vehicles, and other equipment.

The design of the structure is by Ewin Engineering Associates of Washington and The Osborn Co., Cleveland, which has N. W. Herzberg as project manager and Carl Staker as resident engineer. The architect is George Dahl of Dallas.

Osborn, incidentally, designed the old Griffith Stadium, which will be outmoded and abandoned as soon as the new structure is completed.

For the McCloskey Co., O. L. Sciambi is superintendent. The principal subcontractors include Howard P. Foley, Inc., Washington, electrical; Lloyd E. Mitchell, Washington, mechanical; Bethlehem Steel; G & H Steel Co., Philadelphia, reinforcing steel; and A. B. Grundy Co., Philadelphia, miscellaneous steel.

THE END

Tubular Structures units handled by Champion

■ To provide faster and more thorough service to its distributors, Tubular Structures Co., Los Angeles, has entered into an exclusive agreement with Champion Mfg. Co., St. Louis, Mo., by which Champion will cover distributor sales and service of the California company's Simba, Tusky, and Jumbo hoists in all but the 11 western states and western Canada.

Book on indeterminate structural analysis

■ The Ronald Press Co., New York, N. Y., has published "Statically Indeterminate Structural Analysis," a 602-page book by R. L. Sanks.

The book contains a complete discussion of three methods of indeterminate analysis commonly used by structural engineers: moment area, virtual work, and moment distribution, and gives a basic description of other methods to acquaint the student with their potential values. Emphasis is placed on understanding theory, observation of the interrelation of the several methods, and the use of computational short cuts. Included in the book are numerous line drawings and 550 problems for solution, with the

answers to selected problems.

The book may be obtained from the publisher at 15 E. 26th St., New York 10, N. Y., at a price of \$10.

New standard to be issued for plastic sewer pipe

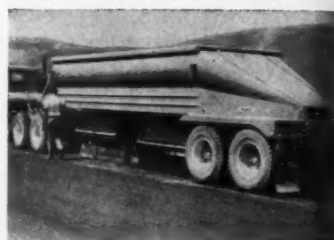
■ The U. S. Department of Commerce, Washington, D. C., has published a new edition of Commercial Standard 228-61, which includes plastic sewer pipe in 8, 10, and 12-inch diameters. The new standard, which supersedes Commercial Standard 228-60, provides a recognized specification for municipalities, engineers, and architects in specifying plastic sewer pipe for mains 8 inches in diameter and larger. Copies will be available within a few months.

NOW! GAR WOOD OFFERS TO HELP YOU

TRAILERS CUSTOMIZED FROM STANDARD EQUIPMENT TO MEET EVERY RESTRICTION, EVERY APPLICATION

Though Gar Wood hopper trailers are available in a wide range of open and closed models for train and semi-trailer operation, with a complete line of discharge gates, they may also be customized to your exact road-weight restrictions, your exact application.

This design versatility allows you not only absolute maximum payloads, but faster, more efficient operation at minimum maintenance and operating costs. You get a unit specifically tailored to bring you the greatest possible revenue within your specific field of operation.



Free-Flowing Materials Hauled Safely in Enclosed Hoppers

Bulk handling of cement, lime, chemicals, and other free-flowing materials can be hauled fast and inexpensively in Gar Wood enclosed hoppers—with no chance of damage or loss from spillage or contamination.

These hopper trailers let you load and unload in record time, haul bigger payloads over the highways, schedule more trips per year.

Enclosed Gar Wood hoppers are available as train or semi-trailer units, equipped with one, two, or three discharge gates.

GAR WOOD HOPPER TRAIN INCREASES HAULING CAPACITY

This big, rugged double hopper train carries a total of 20.5 cubic yards. Ideally suited for general contracting use with aggregate, sand, fill, and spoil materials. Air-powered clamshell gates allow quick dumping at high speeds. Material can be pit-dumped, windrowed to specifications, or stockpiled.



GAR WOOD "EASTERNER" hopper trailer gives you powerful tandem-drive traction plus far greater legal payloads. This unique combination produces extra hauling revenue for both on- and off-highway work.

New York Contractor Earns 45% More With "EASTERNER"

A recent on-the-job Payload Analysis in New York State compared the performance of a tandem rear dump truck and a Gar Wood "Easterner" hopper trailer, both owned by the same contractor. The job involved hauling gravel for road construction.

The figures shown were not drawn up in an office, they were compiled with the contractor in the field. The contractor is now replacing more of his rear dumps with Gar Wood "Easterners."

	HOPPER TRAILER	REAR DUMP TRUCK
Legal Yards Per Trip	15	10½
Yard-Miles Per Trip	105	73.5
Revenue Per Trip, Per Unit	\$13.20	\$9.11
Revenue Per Day	\$158.40	\$109.32
Working Days Per Year	120	
Extra Revenue Per Day	\$49.08	
EXTRA REVENUE PER YEAR, PER UNIT	\$5,889.60	

CONTRACTORS AND ENGINEERS

Avoid legal pitfalls

Penalties for delay of job completion

THE PROBLEM: Generally, the courts will not enforce an agreement that a contractor shall pay a specified sum as a penalty for delayed completion of a job if the owner's actual damage is clearly less than that amount. A contract to complete an addition to a municipal water district's filter building for \$471,712 called for completion within 265 days and for payment by the contractor of \$150 for each day's delay in completion. There was delay, resulting in the district being unable to furnish adequate water supply, and

being required to build bypass lines, and to treat unfiltered water to make it potable. There were other elements of damage sustained by the district that were difficult to ascertain and evaluate. Was the provision for payment of \$150 a day binding?

THE ANSWER: Yes. (Parsons Construction Co. v. Metropolitan Utilities District of Omaha, 104 N.W. 2d 272, decided by the Nebraska Supreme Court.)

The decision was influenced by the court's finding that the provision for

payment of \$150 a day was not unreasonably disproportionate to the damages that might have been anticipated by the parties when the contract was made. The court seems to have been influenced in its decision by the fact that the contract contained this clause:

"Liquidated damages will be waived for and during the extent of any delay which cannot be overcome by reasonable acceleration of the approved work schedule, when such delay is caused by factors beyond the contractor's control, provided that adequate evidence is presented by the contractor to prove such delay and to enable the Utilities District to determine with exactness the extent and duration of such delay for each item of material and equipment involved."

Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Mistake in bidding

THE PROBLEM: An \$89,994 bid on a California school-building contract was low by about \$10,000 due to the omission of an estimate for plumbing and heating work. The mistake was not discovered until after an award was made to the low bidder, who then refused to enter into a contract. The school district sued on the bid bond that had been filed. Was the district entitled to collect the penalty fixed by the bond—5 per cent of the amount bid?

THE ANSWER: Yes. (Elsinore Union Elementary School District v. Kas-torff, 346 Pac. 2d 850, decided by the California District Court of Appeal, Fourth District.)

The decisive fact was that the district officials accepted the bid in good faith without knowing or suspecting that a mistake had occurred. But the court ruled that the amount of damages collectible by the district was 5 per cent of the amount bid and not the difference between \$89,994, the amount bid, and \$102,900, the figure at which a contract was awarded under rebidding.

Government's liability for scaffold accident

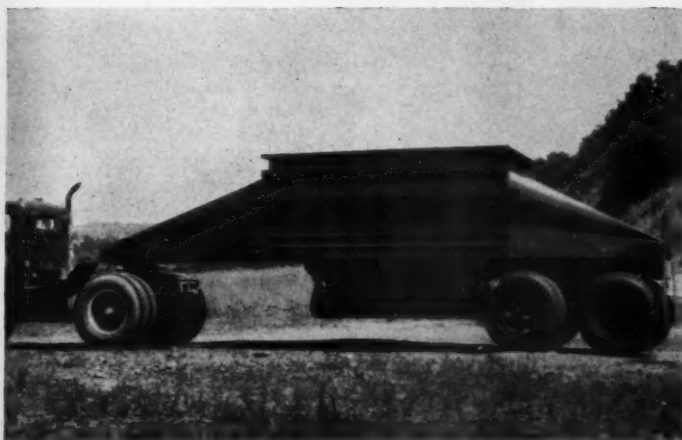
THE PROBLEM: The Federal Tort Claims Act makes the United States government liable for personal injuries negligently caused by its employees while acting within the scope of their duties. A state statute makes an owner of a building under construction or repair liable for injury caused by defective scaffolding if he knew, or ought to have known, of the defect. Work was in progress on a federal building when a carpenter employed by a contractor fell from a scaffold because planks constituting the flooring had not been properly secured against slipping. Was the government liable?

THE ANSWER: Yes. (Schmid v. United States, 273 Fed. 2d 172, decided by the United States Court of Appeals, Seventh Circuit, affirming a similar decision by the United States District Court, Eastern District of Illinois.)

The Court of Appeals said the evidence showed that the government knew or, in the exercise of reasonable care, could have known that the scaffold on which the man was working was in a dangerous condition, in that some of the floor boards lacked cleats and it had less than the customary number of braces. The court ruled that the government, as owner, had the duty, under the Illinois Scaffold Act, to see that the scaffold complied with the act. Its agents failed to perform that duty. It is immaterial that

FREE PAYLOAD ANALYSIS HAUL MORE-EARN MORE!

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GAR WOOD MONO-SHELL HOPPER TRAILERS are sold and serviced by the nation's largest network of experienced truck equipment specialists. These Gar Wood distributors know your local hauling problems, understand your state axle-weight laws.

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Whatever your regional requirements, Gar Wood hoppers let you haul legal payloads not obtainable with any other equipment, and eliminate profit-slashing overload fines. The reasons: exclusive Mono-Shell construction that cuts dead weight to a minimum, and exclusive mounting techniques that distribute more weight over a much greater axle span.

Gar Wood has employed these methods in designing hoppers for on- and off-highway work, in hoppers for hauling all types of materials, in hoppers specifically tailored to axle-weight laws in every state in the country.

Start taking advantage of this opportunity to increase your profits now. Let Gar Wood show you how

hoppers will give you a legal operation that is faster, more efficient, more productive—an operation that will let you make much more money.

SEND FOR YOUR FREE PAYLOAD ANALYSIS TODAY

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Type of material hauled _____
Present type of equipment _____
Tare weight of present equipment _____
Tons hauled per trip _____
Miles per trip (one way) _____



Send coupon to:
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avoid legal pitfalls

the independent contractor might also be liable; the government's liability is based on its own failure to comply with the requirements of the act as owner of the premises.

Court's interpretation of grading contract

THE PROBLEM: Did a street grading and paving subcontractor fail to substantiate a claim against the general contractor for extra compensation?

THE ANSWER: Yes. (C. H. Leavell & Co. v. Vilbig Bros., Inc., 335 South Western Reporter, 2d, 211, decided by the Texas Supreme Court.)

In this case, the general contractor's project manager had certified grading as complete and the general contractor had paid the agreed price less retainage before the subcontractor returned to do paving. The general contractor had informed the subcontractor that retainage would be paid upon final acceptance and approval of the owner, but this did not show that the general contractor waived further performance of the grading contract.

A hump appeared in the pavement within one year, and the subcontractor had guaranteed its work for this period. The general contractor had the hump corrected by another contractor after the subcontractor refused to do it and was entitled to allowance for the cost.

Toll-bridge contract was validly awarded

THE PROBLEM: Was the holder of a state toll-bridge revenue bond entitled to a court adjudication that a contract for construction of the bridge was not legally awarded?

THE ANSWER: No. (Davis v. Washington Toll Bridge Authority, 357 Pacific Reporter, 2d, 710.)

The court decided that bonds could not have been sold without first having a firm construction bid for the floating structure of the bridge; and without the contract, the bond purchase would not have been consummated and money paid.

A statute providing that the state highway commission shall publicly open and read final figures in each of

For more facts on Insert, use Request Card at page 18 and circle No. 288

the bid proposals properly filed, and read only bid items of the three lowest bids, and shall award contract for construction of the bridge to the lowest responsible bidder . . . does not require that the contract be let at the time and place bids are opened. The statute authorizes a reasonable time after opening of bids for awarding the contract to the lowest responsible bidder, and what is a reasonable time depends on the particular case.

The contract for construction of the bridge having been awarded simultaneously with payment from the sale of the revenue bond—at which time funds for construction were first available—the contract was awarded within a reasonable time, although it was 16½ months after the bids were opened. Nor was the award invalid because it contemplated a different time for performance than that originally contemplated.

Rights to compensation of unlicensed engineer

THE PROBLEM: While an office building was under construction, need for air-conditioning developed. The owner contracted with an unlicensed engineer, who was experienced in the planning and installation of air-conditioning equipment, to prepare plans and specifications and estimates for such installation. But the documents were subject to approval by the owner's architects and engineers, who were also to supervise installation of the equipment as an incident to the entire building project. They approved and accepted the unlicensed engineer's work. Was the latter's contract with the owner unenforceable by the engineer under a statute making it unlawful to practice architecture or engineering without registration?

THE ANSWER: No. (Dick Weathers-ton's Associated Mechanical Services, Inc., v. Minnesota Mutual Life Insurance Co., 100 N.W. 2d 819 decided by the Minnesota Supreme Court.)

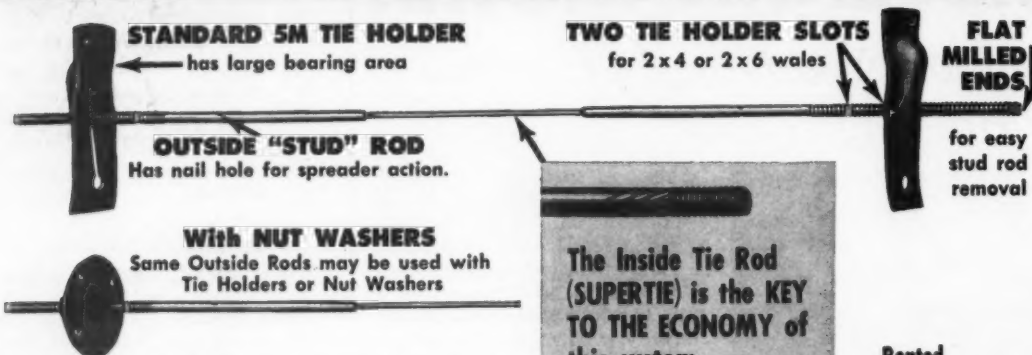
The court reasoned that the general rule—that a contract in violation of a statute against carrying on an occupation without first having secured a license is void—is not to be applied in a particular case without first determining whether the legislature intended such contract to be illegal. This agreement was not prejudicial to public safety, etc.

The plaintiff was sought out by the defendant for his services as an air-conditioning contractor. It was clearly understood by the defendant that the plaintiff was engaged in the air-conditioning business, and that in addition to his qualifications as a contractor he had certain competence in engineering. He made it clear to the defendant that he was not a registered engineer and architect. The defendant had its own architects and engineers and did not wholly rely upon the plaintiff's qualifications. Because of the nature of the work to be performed, it was

SUPERIOR'S **NEW** COMPACT, ECONOMICAL FORM TIE

"SUPERTIE" Assembly

with Tie Holders or Nut Washers



The Superior SUPERTIE Assembly consists of two outside rods, two standard 5M tie holders, or two nut washers. Together with the high-strength Inside Tie Rod (SUPERTIE), this compact assembly offers great economy and versatility over conventional tying systems. The Outside Rod will accommodate either tie holders or nut washers on 2 x 4 or 2 x 6 wales. For easy removal the ends of the Outside Rod are flattened. Another feature, the nail hole, provides for fast and convenient form spreader action. Only the SUPERTIE, left in the concrete, is lost . . . the working parts of the assembly are reused again and again.

This tie system has been designed for compactness, all excess weight and bulk have been eliminated, yet it has a Safe Working Load of 5,000 lbs. (7,000 lb. ultimate capacity.) Write for Bulletin SA-1.

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With
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SUPERIOR Heavy Duty Form Tie Assemblies

TILT-LOCK ASSEMBLY

For heavy duty forming—the Handle Washer slips over outside rod threads to wale—up to 9,000 lbs. safe working load—Ult. cap. 13,500 lbs. May be rented or purchased.

NUT WASHER ASSEMBLY

For contractors that prefer a spun washer. A heavy duty type—capacities are the same as Tilt-Lock Assembly above. Also rented or purchased.

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For more facts, use Request Card at page 18 and circle No. 287

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ENGINEERS

CATERPILLAR REPORTS

On the following pages:

The right machine for the right job

How to move 1,300,000 yards of dirt—with a Motor Grader!

Can you do a shovel's work cheaper with a Cat loader?

The inside story on lifetime lubricated rollers



Many contractors report methods they use (or have developed) that save money. Here's one contractor who isn't satisfied with just a cost saving method—he tries for at least a double savings. It's a philosophy of

The right machine for the right job



1.2 million yards moved in the first 60 days despite miserable weather—that takes some special doing. But it is almost routine for Tillet Bros. Construction Co., Inc. Their methods pay off with lowest cost, highest production. Twelve years ago Joe and Gerald Tillet owned one machine and dug farm ponds. Today they are one of Tennessee's largest contractors with over \$4 million of Interstate work. They personally stay on top of every job, flying from job to job or keeping in touch by radio.

THE RIGHT SCRAPER FOR THE RIGHT JOB

There are obvious advantages in using two-wheel scrapers on some jobs and four-wheel units on others. But the Tilletts get double savings—they use both on the same job. On an Interstate 75 job near Chattanooga, they are moving over 4 million yards of tough chert. Prime movers: three Cat DW20-482s (34 cu. yd. heaped) and eleven DW21-470s (27 cu. yd. heaped). Most contractors avoid mixing their fleet, preferring either two-wheel or four-wheel rigs. The Tilletts find more savings with a mix. On 1500-ft. hauls both units move about the same amount of dirt. But on longer hauls, the

faster, bigger DW20-482s turn in more production at lower cost. On shorter hauls, the DW21s have the advantage. Since hauls vary on a single job, the Tilletts take advantage of *both* types.

They have definite ideas about which machines and what methods are best. For example, on another big highway project near Knoxville—where they ran into rock and muck, and hauls were short—they depended primarily on Cat crawler-drawn scrapers. Tillet Bros. use their D8-463s (29 cu. yd. heaped) for the rough and short haul work, their fast-moving wheel units for big production. The crawlers don't have to wait for good conditions; they can move right in through mud and steep grades to build up the haul roads, open cuts and fills. *The right machine at the right time—money saved, time saved.*

SPECIALIZED MACHINES—OR “MULTI-PURPOSE”

Every job has a wide variety of dirt-moving tasks, from opening up and stripping to long hauls. Some contractors have tried “multi-purpose” machines in the attempt to handle all these conditions with one type rig. The Tilletts tested them too.

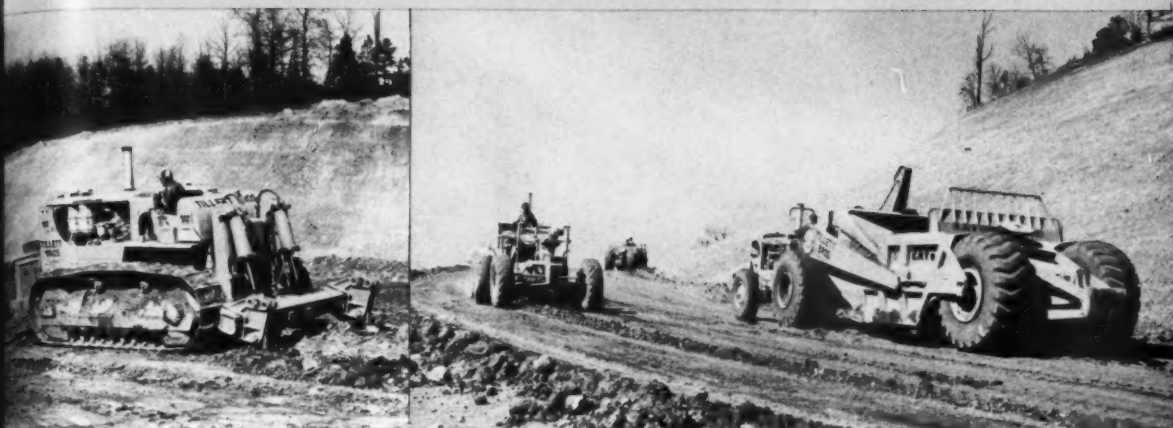
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But they found the *right* machines will do it better, faster and cheaper—and with lower initial investment. They open up the entire job as quickly as possible, building several haul roads so, in bad weather, they have a choice of work to do. This lets their rubber-tired machines work efficiently regardless of weather. That's how they were able to move 1.2 million yards in the first 60 days on the Chattanooga job, despite miserable winter weather.

Wheel scrapers are supposed to be high-speed haulers—the Tilletts do everything possible to make sure they are. Haul roads are built 50 feet wide for easy passing at high speed. High speed isn't enough; they want *highest* speed from each unit. Most contractors know haul roads should be kept smooth and hard. The Tilletts make sure their roads are the best. Four Cat Motor Graders work constantly on their roads. Double savings? Yes! Their haul units barrel from cut to fill almost all the way at top speed, cutting cycle time. And, as Gerald Tillett puts it, "It doesn't take long to chew up ten tires on a rough haul road. And ten tires pay for a motor grader."

Loading techniques are important too. Here

again, specialized machines pay off. D9s with rippers insure fast loading of stubborn material; D9s with cushion dozers speed pushloading. Power shift transmissions better match the crawlers to their work and help increase production throughout a 10-hour shift.

SPECIALIZED LOADING

Every angle is watched to speed loading to match Tilletts' high production schedules. "We've got to keep dirt moving," Albert Jones, superintendent, told us. "We start ripping as soon as the loading slows down or the tires start spinning. (He's using a power shift D9 with straight-shank Cat Ripper.) This power shift D9 rips fast enough to stay ahead of all 14 scrapers—and that's going some! It's faster and cheaper than blasting... and it breaks up the material so it's easier to load."

The big D9 he's using has plenty of power to shatter tough rock, the ruggedness to stay on the job day after day. With split-second, no-clutch shifting, the operator can shift down for tougher going and right back up again (without loss of momentum) for faster ripping when conditions permit.

(Continued on next page)



(Continued from previous page)

Since shifting effort is so reduced, output is higher because the operator stays fresher, and ripping keeps scraper loading at maximum efficiency.

Every second in the pit is considered important. The Tilletts load down hill whenever possible; they tandem push when it will speed loading and cut their cost per yard. Recently they added another cost cutter—9C Dozers on their D9 Pushers. These inside-mounted, *cushion* dozers let the D9s swing in close behind the scrapers and make contact at *three miles per hour*, without jolting either machines or operators.

"This cuts 10 to 15 seconds off loading time," Gerald Tilletts estimates. "These cushion dozers let us make fast contacts, using both pusher and scraper momentum to pick up loads faster. And we've still got a dozer to dress up the cut and hog out boulders. A smooth cut means our scrapers get through quicker." And on-the-go, up-and-down power shifting means haul units are boosted out faster, pusher gets in place faster for the next load.

THE RIGHT MACHINE PAYS OFF

Working machines as they do, you might expect maintenance costs to be high. On the contrary, the ease of servicing and maintaining Cat-built machines

appeals to the Tilletts, too. They run their own maintenance shop on the job... find parts are always easy to get in a hurry from their Caterpillar Dealer. And his service department and field service are always available when needed. Operating costs are kept low by such things as lifetime lubricated rollers on the Cat track-type Tractors. Metal-to-metal seals keep lubrication in, dirt out... need no servicing until rebuilt. There is economy in their Cat Diesel Engines that operate on low-cost fuel—an important consideration when you're burning 1800-2000 gallons a day.

Joe Tilletts explained their policies: "We buy Cat-built equipment because we're convinced it's the best in the business. And we trade 'em often to keep up with the latest improvements. (Typical of the whole Tilletts operation, all machines on the Chattanooga job, except one Cat No. 12 Motor Grader, are less than three years old.) We pay the operator the same wages regardless of a machine's condition, but he can move more dirt when he has a good machine under him. We can't afford to have anything but the best equipment there is." That's the attitude of the Tilletts of Tennessee, an organization that in 12 years has grown from one used D6 to an 82-machine, million-dollar operation.

CAN YOU SPOT THE SAVINGS IN THIS PICTURE?



(Clue: it's a matter of adapting general-purpose equipment to a specialized situation)

This isn't the kind of earthmoving spread you'd expect to see on a job involving 1,300,000 yards of dirt. But the W. A. Smith Construction Co. of Kansas City, Mo., will tell you it works just fine, and that's what counts. The job is clearing the way for a new Missouri Pacific Railway Co. switchyard at North Little Rock, Ark.

Several methods were considered before the Smith Co. settled on this Cat No. 14 Motor Grader with Ulrich Domor elevating grader.

Scrapers, naturally, got consideration, but the haul—three miles one way over paved roads—ruled them out. A shovel would not have been fast enough. Another possibility was the use of a loader with a tractor to push and another to pull—but that looked like a hefty investment in equipment for a job as specialized as this.

So it narrowed down to the No. 14. How did production look? Promising. Faster than a shovel, not quite as fast as a loader-tractor team. But substantial savings on the investment in the No. 14 more than offset the modest production increase that would have been possible with the tractor-drawn loader.

And there was another important consideration that made the No. 14-Domor combination look even

more attractive. Once the job was complete, the No. 14 would be ready to take on a wide range of routine jobs.

As it turned out, Smith's choice was a wise one. Despite poor footing with fairly high rolling resistance, production was high and profitable. With plenty of lug in its 150 HP turbocharged engine, the No. 14 with Domor kept up with the 19-truck spread easily. Power-boosted steering and leaning front wheels eased the operator's job, let him load 425 to 500 trucks in a ten-hour day. Loading costs per bank cubic yard were only 1.22¢.

Any method that gets dirt costs down so low is worth remembering. When you have to move a lot of earth in a specialized loading area, check out the No. 14-Domor elevating grader combination before you invest in other specialized equipment.

There's a good chance you'll get the production and cost combination you want—and no matter how tough the job, you can be sure that the No. 14 can stand up to it. Because it has such quality features as the exclusive Cat oil clutch (up to 2000 hours without adjustment) and triple box section main frame, you know that your No. 14 will be ready to take on plenty of other tough jobs in the years to come.



They're doing a shovel's work with a Cat 977 Loader

If you think you need a shovel for a job but don't have the money to buy one—you could be in luck. Maybe you'll end up, like Roy Ables, with a machine that does a shovel's work at half the price! Here's how:

Back in 1957, Mr. Ables took office as road commissioner and convinced Lincoln County, Tennessee, that they'd be better off if they produced their own crushed rock, rather than depend on river run gravel. They'd get more select material for road maintenance and they'd be able to work all year 'round.

The only hitch was that he didn't get quite enough money. A crusher, a couple of trucks, impactor, compressor and drill ate up most of the \$125,000 he was allotted. There wasn't enough left for the 1-yard shovel every-

body thought he had to have to run the quarry.

That was about the time Caterpillar was introducing the new 977 Series E Traxcavator Loader and the Caterpillar Dealer suggested he try it in place of a shovel. It cost only half as much.

Most quarry men in the area scoffed at the idea. But the dealer was willing to let Mr. Ables try the 977 for a month—no strings attached. He did. And the loader is still on the job.

That 977 has spent about half its life in the quarry, handling 1000-1500 tons of shot rock a day. The rest of the time, it has been used out on the county roads for clearing and grading, and in stockpiling around the crusher.

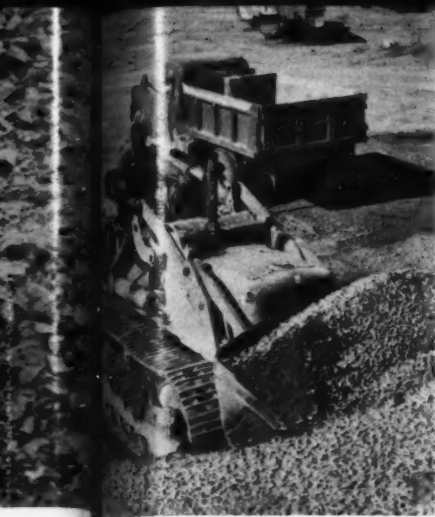
The only repairs in over 4000 hours have been two broken idlers and two

sets of bucket teeth. (The machine is equipped with a standard 2¼-yd. bucket.) There has been no track work needed on the machine, a credit to the good care Mr. Ables and his operator give the machine. The Cat oil clutch has 4130 hours of service and it has been adjusted only twice.

"In many ways," says Mr. Ables, "this 977 is better than a shovel. It can pick up oversize rocks and carry them off out of the way. And it is its own clean-up machine (a shovel would need another machine to keep the quarry floor clean)."

The current Series H 977 can out-produce the Series E machine by 50% or more on many jobs. The reasons the 977H can handle the work of a 1½-yard shovel in many applications are the power shift transmission and

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at half the cost

the faster, more powerful hydraulics plus the exclusive automatic bucket positioners. In addition, when the work is intermittent, the loader can double on other jobs around the quarry. Most important, it does the work with a minimum of maintenance, yet costs only half as much as a shovel with comparable production.

Roy Ables is convinced of the merits of the Caterpillar track-type Loader in handling shot rock. He says, "When I need a new machine I'll get another Cat Loader, put it in the pit, and use this one on the road."

Check with your Caterpillar Dealer if you have a shovel job that might be handled by a Cat wheel or track-type Loader. He has the facts you need to make a sound decision that can save you money.

THE INSIDE STORY

How Cat Rollers Are Designed
to Eliminate Maintenance and Give Longer Life

Simply stated, Cat lifetime lubricated rollers eliminate maintenance by keeping the lubricant in and dirt and grit out. There is no need to replace the lubricant—because it can't escape. There is no need to change the lubricant—because it can't get dirty. Hence, Cat rollers are maintenance-free until rebuilding time.

The chief reason for this maintenance-free performance is the exclusive Caterpillar floating ring seal, illustrated at right.

Each seal consists of two metal floating rings of a hard alloy. The inner surfaces of the rings are finished to a mirror-like smoothness and fit so perfectly that it is practically impossible for lubricant to get out or grit to get in.

In addition, synthetic rubber "O" rings behind each floating seal keep even, constant pressure on seal surfaces and can take extreme shock loads without leaking.

Cat roller seals are noted for long life and for reusability at rebuild time. One example is a contractor in the West whose rollers were rebuilt at 5700 hours. Seal wear was only 35%—so small that they could be reused.

The same reusability is characteristic of the bushing type bearings found in Cat rollers. These bearings have greater load-carrying ability than ordinary bearings and can normally be reused when the rollers are rebuilt.

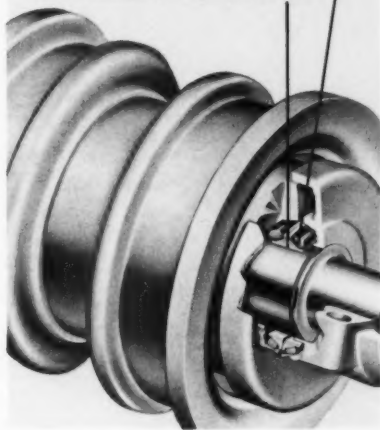
Freedom from time-consuming lubrication maintenance is only one advance of the new Cat rollers. Higher hardenability steel also strengthens each track roller for longer life. More steel under the rim load area gives greater support and resistance to peening. Shafts have larger diameters with increased beam strength.

Caterpillar lifetime lubricated rollers are standard on the D9, D8, D7, D6 and D4 Tractors and the 977, 955 and 933 track-type Loaders.

HOW IT SEALS

"O" rings maintain a constant load on metal rings.

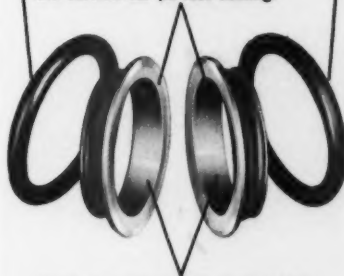
Lapped surfaces of metal rings prevent passage of lubricant or grit.



FLOATING RING SEAL

Special synthetic rubber "O" rings are resistant to oil, heat (up to 200° F.) and cold (down to -40° F.).

Seal surfaces are lapped to mirror-like surface for perfect sealing.



Metal alloy rings are much harder than the best file steel—are rust and corrosion proof.

Special report to users of Caterpillar equipment



New Cat parts stretch dollars "down where the digging's going on"

That's more than just talk! More and more users are conducting their own field trials of ground engaging tools—tips, bits, teeth and edges—to determine which brand gives them the best performance-cost balance. And time after time, they find that genuine Caterpillar ground engaging tools outclass

all comers—in production and over-all economy!

Take Cat cutting edges. These edges have been contractor-tested with most of the market's leading brands all over the country. Results: Cat edge wear life—10-60% longer. Cat edge cost—15-50% less per hour. Think of that in terms of dollars!

HERE'S A LOOK AT RECENT FIELD TRIALS ON SCRAPER CUTTING EDGES:

Two DW21-470 Scrapers, one with Cat *standard* edges and one with popular brand *thick* edges, were put to work "side-by-side" by a contractor in hard, red clay on an Interstate Highway job. His findings:

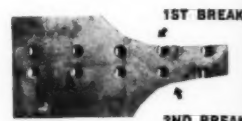
Brand	Price	Hours of Life	Cost per Hour
Other	\$121.22	1060	\$.114
Cat	\$128.28*	1360	\$.094

HIS SAVINGS WITH CAT EDGES — 17.5% PER OPERATING HOUR

* Test completed before recent new low price of \$102.30 effective.



CATERPILLAR



OTHER BRAND

A Cat $\frac{3}{8}$ " stinger and another brand *one inch thick* were split in half and a section from each installed on *same* DW21-470 Scraper working in decomposed lava with embedded basaltic boulders. Other brand section broke after 48 operating hours, was reversed but broke again two hours later—a total of 50 hours of life. Cat edge wear during period was $\frac{1}{4}$ ", other brand $\frac{1}{2}$ ".

Your Caterpillar Dealer has the facts on many of these tests—go over them with him and start to save more now.

Caterpillar continually up-dates its line of ground engaging tools. Some of the newcomers to the line that "stretch your dollars" are: new self-sharpening end bits and ripper tips, patented reversible router bits, and new-design scarifier teeth for Motor Graders. These new money-savers keep production high, costs down.

For the best in new and used machines, and the best in parts and service—see your Caterpillar Dealer

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar, Cat and Tractor are Registered Trademarks of Caterpillar Tractor Co.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

necessary for the plaintiff, in order to give defendant an estimate of the cost of the proposed work, to specify the materials needed with plans and details of how the work was to be carried out. The defendant was interested in having the work done at a price that would come within its budget. Since the plan for this work prepared by its own architects and engineers exceeded the budget, it was not surprising that it consulted a contractor who, because of his business, had specialized knowledge of methods of installing air-conditioning equipment. The design and plan he submitted to accomplish this purpose were approved by the defendant's architects and in effect were adopted by it and became its own.

Liability of city impliedly admitted

THE PROBLEM: Performance of a contract to erect a municipal building was first delayed and then the project was abandoned by the city because of zoning difficulties. While abandonment was being considered, the city, in a letter to the contractor, asked what damages the latter would expect if the project were abandoned. Did the city thereby impliedly admit liability for breach of the contract?

THE ANSWER: Yes. (City of Richmond v. A. H. Ewing's Sons, Inc., 114 South Eastern Reporter, 2d, 608, decided by the Virginia Court of Appeals.)

The court said that since the contract specified that the city could cancel the contract on giving seven days' notice in writing, the city broke the contract by adoption of a council resolution directing abandonment of the project and by failing to notify the contractor in writing of cancellation of the contract.

The contractor's damages assessable against the city included actual expenses incurred before the cancellation, reimbursement for liabilities to subcontractors, and lost profits that would have accrued had it been permitted to carry out the contract. Although speculative and conjectural profits could not be recovered, all damages which were the direct results of the breach and which could be proved with reasonable certainty could be recovered.

Contractor trespassed

THE PROBLEM: Defendant, a construction company, prepared a tract of suburban land for development and sublet the work of constructing streets, directing a subcontractor to store excavated earth on a certain lot. Defendant had owned the lot and claimed to have obtained the consent of the company that bought it, not knowing that the plaintiffs had bought it. The plaintiffs' deed was recorded. Plaintiffs were holding the lot for future building, were not using it, and did not intend to rent it to anyone. Plaintiffs sued the defendant and its subcontractor for damages. The trial judge found that the rental value of the lot during the storage was \$5,500, but he allowed only \$200,

as nominal damages, because plaintiffs intended that the lot should remain idle, and the earth had been removed. Did the judge err?

THE ANSWER: Yes. (Don v. Trojan Construction Co., 2 Calif. Reporter 626, decided by the California District Court of Appeal, First District, San Francisco.)

The higher court awarded plaintiffs the full rental value of the lot, against the defendant contractor and its co-defendant, the subcontractor. But it awarded the latter judgment against the contractor for reimbursement against the plaintiffs' judgment, since the subcontractor had justifiably assumed that the contractor had authorized and directed that the excavated earth be placed on the lot.

Extra pay demanded for 'changed conditions'

THE PROBLEM: Contractors on a state highway job involving construction across an irrigation field sued for extra pay on the ground that work was hampered by unanticipated water conditions on the job site. Were they entitled to collect?

THE ANSWER: No. (Morrison v. State, 357 Pacific Reporter, 2d 389, decided by the Oregon Supreme Court.)

The court noted that construction was required during an irrigation season when water would be turned upon the area. The court said:

"The plaintiffs admit they anticipated the water might slow down their operations and allowed an ad-

ditional amount in their bid for this contingency. The latter fact alone would indicate not that the condition was unexpected but that the plaintiffs misjudged the extent thereof. Plaintiffs' complaint that the amount of water was unexpected applies only to the proportion and not to the character of the condition. The contract provided: 'All work must be done during dry weather, with dry materials, and while the rock base and all other parts of the work that are being worked upon are dry. . . . Work during wet weather . . . will not be permitted.' Plaintiffs can hardly complain that they were misled by this provision because of plaintiffs' careful examination of the area and the special provisions in the contract concerning irrigation. . . ."

4500 sq. feet per hour . . . That's TAMPING, brother!



. . . That's the kind of tamping that packs profit into paving jobs. These Stow tampers work faster, more efficiently compacting granular soil in trenching, backfill, sub-bases, foundations. Perfect for black-topped surfaces and for preparing pavement patches, too.

Precision engineered for top performance, the Stow T-18A tamper coordinates the engine stroke with the vibrator stroke to deliver maximum impact (2200 lbs.) to the tamping surface; is designed to propel itself along at speeds up to 50 feet per minute . . . while it tamps more than 4500 sq. ft. per hour!

And talk about trouble-free . . .

The Stow Tamper is powered by a Wisconsin easy-start engine . . . equipped with special fuel pump to insure efficient engine performance in all operating positions. And here's a maintenance note: gas tank is mounted underneath the engine for maximum rigidity . . . less wear and tear!

Like we said . . . "That's tamping!"

Try this revolutionary Stow Tamper on your next job. Your local distributor will be glad to arrange an on-the-job demonstration!

Remember, Stow T-18A Tamper compacts **FASTER, MORE EFFICIENTLY, WITH LESS WEAR AND TEAR.**

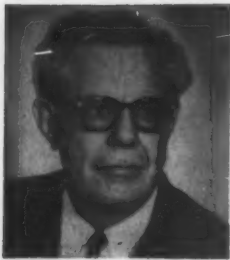
Call your nearest Distributor or send in the coupon, **TODAY!**

STOW MANUFACTURING CO.
Dept. M-1 40 Shear St. Binghamton, N. Y.
Please send me Tamper Bulletin 610-10.

NAME TITLE
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For more facts, use coupon or Request Card at page 18 and circle No. 289

Management influence on production costs



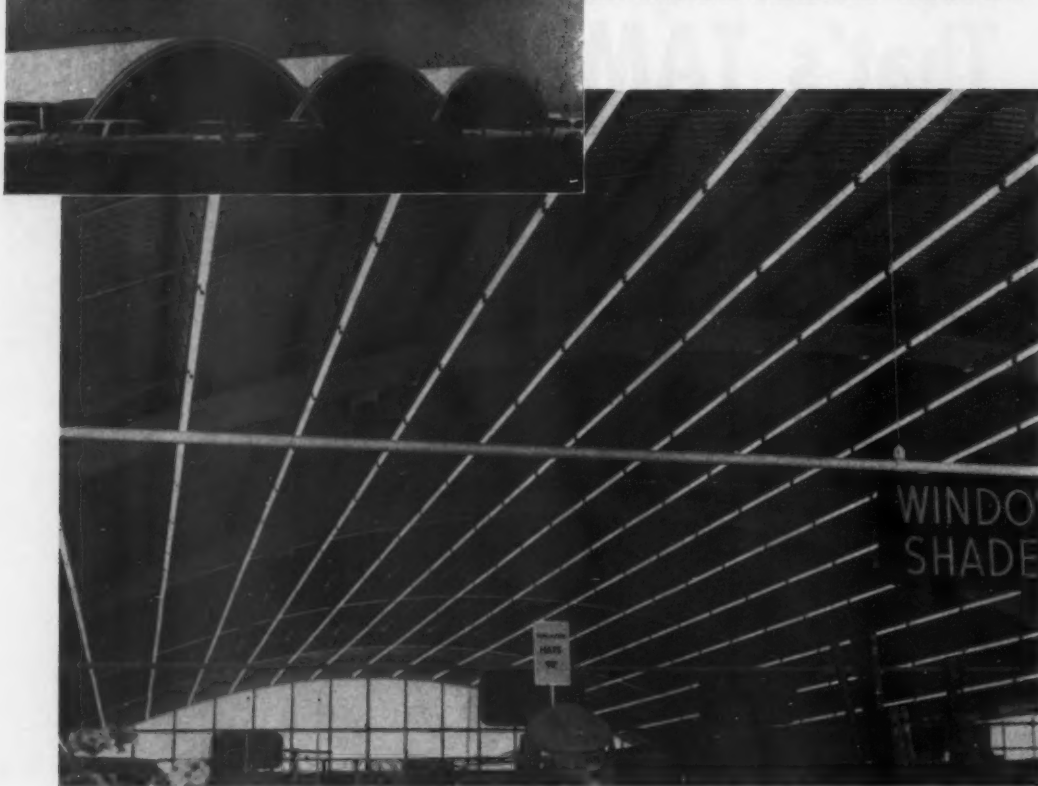
by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

Dun & Bradstreet each year reports an increasing number of failures in the construction industry. What are the reasons behind these failures, and what can be done about them?

One contractor, who is now out of business, had been successful, but

management difficulties began to show. The administration of the firm was lax, and the contractor over-extended himself on equipment that was not best suited to his work. Bad supervision added to his difficulties. A competent construction consultant could probably have advised this contractor that his organization was incompetent to bid and remain in business.

STRAIGHT CHORD STEEL JOISTS? IN THESE CURVED ROOFS?



They were used here—with economy and efficiency!

One of the biggest advantages of Laclede Open Web Steel Joists is their versatility—their adaptability to practically any architectural style.

Here's an example: the interesting new store recently opened by Central Hardware Company, biggest and best known retail hardware chain in the St. Louis area. It was designed by Schwarz and van Hoefen, and built by Alport Construction Co., both of St. Louis.

Notice how the joists were set longitudinally across the arched I-beams, forming a strong, lightweight, firesafe base for the cylindrical arches. Observe another practical little touch: the fluorescent lighting tubes attached to the bottom chords of the joists for the entire depth of the store.

No matter in which style you design or build, you'll find many time-saving, cost-saving uses for versatile Laclede Open Web Steel Joists.



LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI

Producers of Steel for Industry and Construction

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Yet the point is that the contractor bid work on the assumption that his management was functioning at 100 per cent efficiency. Could anyone have convinced him that he was only, say, 45 per cent efficient?

Contractors must evaluate the efficiency of their organizations honestly, taking the following five management factors into consideration:

1. Job preplanning and work-methods selection
2. Selection, care, and repair of equipment
3. Estimating and cost control
4. Scheduling and expediting
5. Communications and supervision

Let's take a look at the first item on the list, job preplanning and work-methods selection.

The greatest advances in the application of this industrial engineering technique to construction have been made by industrial firms doing their own building, such as E. I. du Pont de Nemours. Information released has shown that proper preplanning and work-methods selection can cut production costs from 10 to 15 per cent.

These results will not come as a surprise to other industries, since no large concern manufacturing automobiles, refrigerators, etc., would think of using manufacturing and assembly methods that were not predetermined by their industrial or production engineers.

On the basis of a 10 to 15 per cent saving in production costs, the result of this technique in terms of expenditure per \$1,000 for labor, equipment, and materials is a reduction of 7 per cent. Assuming normal production on the 50-minute hour, or 83 per cent efficiency, certainly part of this 10 to 15 per cent saving can be credited to the normal figure—raising the efficiency to near 90 per cent.

It follows that the other four management factors involved: selection, care, and repair of equipment; estimating and cost control; scheduling and expediting; and communications and supervision must efficiently implement proper preplanning and work-methods selection. If there is administrative looseness here, it will put brakes on or prevent the stated savings.

How good is the average contractor with regard to all these factors? What is the measure between a good outfit and a poor one? A 10-year study by the writer, based on an analysis of the construction-business knowledge of nearly a hundred contractors and several thousand management-training enrollees, results in the conclusion that over-all efficiency is about as follows:

Factors	Per cent
Job preplanning and work methods	55
Selection, care, and repair of equipment	72
Estimating and cost control	63
Scheduling and expediting	78
Communications and supervision	65
Average over-all management efficiency	66.4

CONTRACTORS AND ENGINEERS

This out ver record the co of all umn a over-a figure which are jus A h cern has re Associ ington, titled "Accoun this wo recomm the est form a with a You, with th here to and bid in turn efficien perform under v may be proved equipme cations centage. can man from wh do much tic and Chain Rex tr The c tion of Wis., ha and sour You Bes engineer operation truck-mi The fil the Rex and eco top lega 155—a r minimum To obt film, con tributor Co., cons Milwauke New b to Smo A new has been ters, Orm The 80 examples spective Smoley's prove of the tables ers, studer mechanic \$1.50 per s be obtaine P. O. Box For a AUGUST, 1

This figure of 66.4 per cent works out very well with available statistical records based on tax reports that—on the conservative side—27.7 per cent of all contractors are in the loss column at the end of the year. This is an over-all efficiency of 72.3 per cent, a figure that would be lowered by those which are not in the loss column but are just not making any money.

A helpful aid to contractors concerned with management efficiencies has recently been published by The Associated General Contractors of America, 1957 E. St. N. W., Washington, D. C., at \$2.50 per copy. Entitled "Suggested Guide for Field Cost Accounting for Building Contractors," this work incorporates the idea often recommended in these columns that the estimate items be set down in form and sequence in accordance with a cost code.

You, as a contractor, can work with the management factors given here to improve your own competitive and bid position. Taking each factor in turn, you can evaluate your own efficiency, based on records of past performances or on a job currently under way. Once this is done, you may be able to spot areas where improved methods of work, or better equipment, scheduling, or communications can raise your efficiency percentage. The best percentage a firm can manage should provide the basis from which bids are made; this will do much to insure that a bid is realistic and includes a profit.

THE END

Chain Belt releases Rex truck-mixer film

■ The construction machinery section of Chain Belt Co., Milwaukee, Wis., has released a 14-minute color and sound film, "The Rex That Suits You Best," highlighting the design engineering and the cost-reducing operational features of the new Rex truck-mixer lines.

The film gives special attention to the Rex Model 77 offering flexibility and economy, the Wate-Saver for top legal payloads, and the Model 155—a rugged mixer designed for minimum maintenance.

To obtain free rental prints of the film, contact your nearest Rex distributor or write direct to Chain Belt Co., construction machinery section, Milwaukee 1, Wis.

New booklet is 'Key' to Smoley's tables

■ A new booklet, "Key to Smoley's," has been published by George F. Wolters, Ormond Beach, Fla.

The 80-page "Key" gives graphic examples and solutions and their respective application to the C. K. Smoley's engineering tables, and will prove of value to numerous users of the tables including architects, builders, students, draftsmen, and civil and mechanical engineers. The price is \$1.50 per single copy. The booklet may be obtained from George F. Wolters, P. O. Box 475, Ormond Beach, Fla.

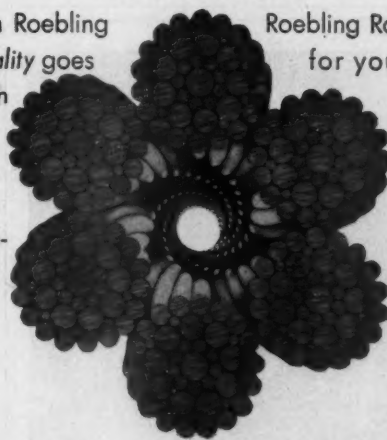
For more facts, use Request Card at page 18 and circle No. 291

AUGUST, 1961



A NEW MANUAL AGGREGATE BATCHER made by Erie Strayer is fed by a Hough Model H-30 Payloader tractor shovel with an operating capacity of 3,000 pounds. Both units are owned by Murphy Concrete Products Co., Black Creek, Wis.

Profit from the inside story on Roebling Royal Blue Wire Rope—the quality goes all the way through. Extra high strength in conjunction with uniformity of rope construction means unequalled resistance to wear and tear — and a whopping increase in service life. That is why every inch of



Roebling Royal Blue pays off on the job for you. Get all the details from your wire rope distributor, or write for free booklet to Roebling's Wire Rope Division, Trenton 2, New Jersey.

ROEBLING
Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation.

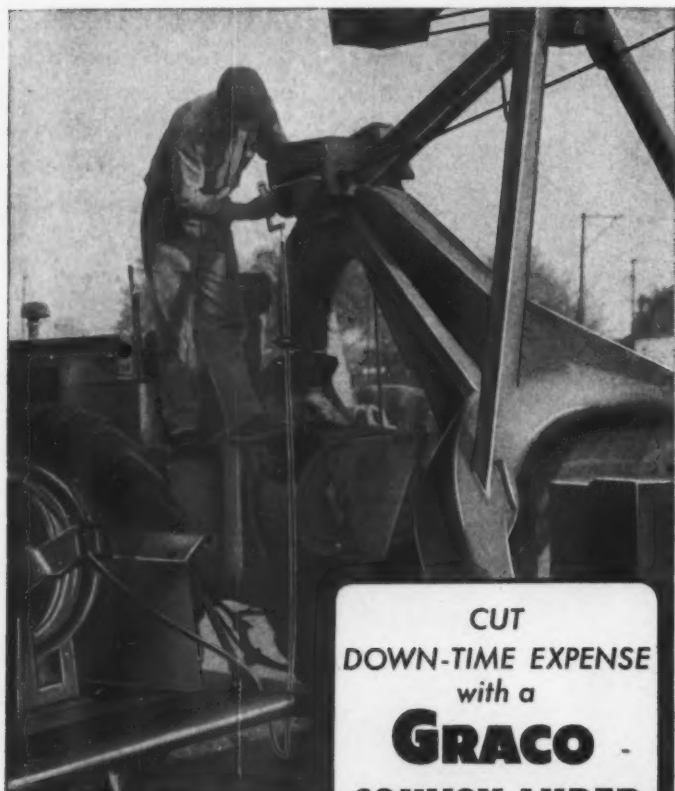
Quality inside and outside

We put a lot of work into it — You get a lot of work out of it

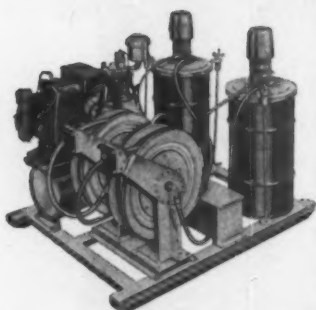




Two pavers working at a fast clip laid the 80,275 tons of hot-mix required for a 5-mile section of Interstate in Idaho. This Cedarapids paver, being fed by a Ford truck and Anthony semitrailer has an attachment that strikes off the slope at the edge of the pavement.



CUT
DOWN-TIME EXPENSE
with a
GRACO
CONVOY LUBER



FREE! Graco Idea Book describes and illustrates typical equipment arrangements, gives specifications, explains how to "job plan" your lube truck. Send for your copy today!

Every minute you spend maintaining your equipment costs you money! That's why it will pay you to investigate a Graco Convoy Luber.

Designed for on-the-spot lubrication . . . these lubers work to provide fast greasing, oiling and air service in the field.

You pump lubricants direct from original shipping drums . . . save equipment transportation time . . . cut costly breakdowns drastically by maintaining around-the-clock lubrication service.

With Graco on the job, preventative maintenance can be fast and systematic . . . and scheduled lubrication of equipment means longer equipment life, less down-time.

Graco Convoy Lubers are available in many sizes and any combination of reels, pumps, compressors, or hoses. See your Graco dealer today for more details on the combination to meet your job requirements.

GRACO
ENGINEERS AND MANUFACTURERS

GRAY COMPANY, INC.
847 Graco Square
Minneapolis 13, Minnesota

For more facts, use Request Card at page 18 and circle No. 292

Fast pavers work on big contract

Change orders increase bridge clearances and provide emulsified-asphalt base stabilization

Two pavers worked together to lay 80,275 tons of asphaltic concrete and complete the largest single highway contract awarded by the Idaho Department of Highways. The project provides a 5.1-mile freeway bypass carrying Interstate I-90 around the picturesque city of Coeur d'Alene and eliminating a serious traffic bottleneck on this heavily traveled route.

The general contractor for the \$3.27 million contract, Cherf Bros. & Sandkay Construction Co., Inc., Ephrata, Wash., got the job by virtue of bidding just \$144 less than the second low bidder.

The job of moving the 2.1 million cubic yards of unclassified excavation got under way in April, 1959. Eight structures had been built under a previous contract. The four remaining structures were included in the big general contract and were sublet to Henry Hagmann, Spokane.

About the time the grading was completed, the military decided it needed 17 feet of clearance at bridges. So a change order was issued revising the grades in the vicinity of the structures to provide the additional clearance.

Careful blasting

Scraper spreads handled most of the earth excavation, but a large volume of rock had to be drilled and shot. This material was loaded by a Manitowoc 3600 shovel and a Michigan 375A tractor shovel (with 4-yard bucket) and hauled by Euclid end-dumps and hired dump trucks. The grade was compacted primarily by Hyster grid rollers.

Since most of the alignment passes through a residential area, the rock blasting had to be done with extreme care. The contractor used a seismograph to record the effect of each blast as a permanent record of the shock intensity.

Since the route is a new alignment, there was no through traffic to contend with. Traffic on the cross streets was all handled on paved detours.

As portions of the grade were completed, a subcontractor began placing the 0.3-foot lift of 1-inch base rock. The subcontract to the Grant Construction Co., Coeur d'Alene, provided for the furnishing and placing of the base materials and supplying the aggregates for the hot-mix. The single lift of 1-inch rock required

Need HOSE in a HURRY?

**Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver**

Wherever your job is—whenever you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

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	PHILADELPHIA, Pa.
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Continental Suction Hose is recognized nationally by contractors for its superior quality—not an ordinary hose, but a hose built for rugged, dependable service. Sizes 1½" through 12", for water and/or sand suction. Send for catalog of HOSE and PROTECTIVE CLOTHING.

HOSE by CONTINENTAL

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For more facts, use Request Card at page 18 and circle No. 293

CONTRACTORS AND ENGINEERS



The second paver, a Barber-Greene, lays the first lane of the second course of surfacing. The first course went down in 16, 11, and 12-foot lanes laid by both rigs. The second course is laid in 16, 10 and 12-foot lanes.

92,375 tons of material.

The second base course consisted of two 0.2-foot lifts of 3/4-inch material, 125,525 tons of it in all. This material was laid down on the roadway, watered, bladed, and rolled. It compacted readily to 100 per cent density. However, under the effect of subsequent rains, this material lost its stability and would not carry the loads of the paving equipment. It was believed that the preponderance of round particles was the basic cause of this failure. Less than 15 per cent of the material was crushed.

Emulsion stabilizers

Since the material had been produced and placed according to specifications, the burden of correcting the situation fell on the highway department. The engineers decided to add 3 1/2 per cent emulsified asphalt to the top 0.2 foot of the base. When the contractor and the highway department were unable to agree on a price to be charged for this extra work, the department decided to do it

on a force-account item.

The base material was worked up with motor graders and a mixer, watered, and then shot with the application of SS-1 emulsified asphalt, which was applied by an Etnyre distributor. A pair of Caterpillar No. 12 motor graders processed the material until it was thoroughly mixed. It was then laid back to grade and rolled by a Gallion 3-wheel 10-ton roller and a Bros 9-wheel rubber-tire roller. This surface was broomed clean and tacked with a fog coat of RC cutback asphalt ahead of the paving.

With this treatment, the base stood up very well through subsequent rains, even under relatively heavy truck traffic.

Bituminous paving

L. W. Vall Co., Pasco, Wash., sub-contracted for the bituminous paving, bringing in a Standard 5,000-pound batch plant and two pavers to speed the work. The plant was set conveniently near the right-of-way where

(Continued on next page)



A Gallion 10-ton tandem that handles the breakdown pass works near a Seaman-Andwall Model 5620 compactor that rolls the courses until desired compaction is attained. Finish rolling is done by a 3-axle tandem.

TARCO Aggregate DRYERS

ROTARY-PORTABLE



TARCO "Flash-Flame" Dryers are available in two sizes: A. Model AD-7, the standard dryer that's been used for years by highway maintenance crews, contractors, railroads. B. this larger Model AD9 dryer, shown above, is equipped with:

1. a longer and larger rotating drying drum.
2. more powerful drive (electric or gasoline)

3. 50% greater heating capacity

4. heavier, spring mounted running gear.

Tarco "Flash-Flame" Dryers, either model are quickly put into operation, simple to operate, easy to service.

Both dryers are illustrated and described in a new pamphlet. We'll be glad to send you all the information . . . no obligation.

TARRANT MFG. CO.

31 Jumel Place, Saratoga Springs, N. Y.



For more facts, use Request Card at page 18 and circle No. 295

ANOTHER COMPLETE DRAINAGE STRUCTURE FROM SYRO

Three days after this load of SYRO STRUCTURAL PLATE arrived at its destination, the structure was assembled, backfilled, and ready for traffic. There's no time lost waiting for curing, no costly forming, with corrugated metal structures.

For economy, strength, durability . . . specify SYRO STRUCTURAL PLATE.

And, remember SYRO for STEEL BEAM GUARD RAIL!



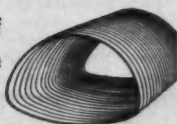
This Syro structure was assembled in just two days. It is now ready to replace the narrow, unsafe bridge in the background.



THE MARK of PROGRESS

For further information or the name of your nearest Syro distributor, write, wire or call

SYRO STEEL CO., GIRARD, OHIO



For more facts, use Request Card at page 18 and circle No. 294



All hot-mix for the job is turned out by this Standard 5,000-pound batch-type plant manually operated through air and electric controls. The 7 x 28-foot dryer is fired with No. 5 fuel oil. The 20,000-gallon asphalt and 10,000-gallon fuel-oil storage tanks are heated electrically. An International truck and semitrailer are loading, and in the background a Michigan 275A feeds aggregate to the plant.



Treated timber guardrail posts are being set by the Standard Traffic Controls Co., Spokane, Wash., the subcontractor for this work. In the background, a Buda-Hubron Earthdrill mounted on a Marmon-Herrington truck is drilling the holes for the guardrail posts.



A workhorse on this job is a Michigan 375A tractor shovel with 6-yard bucket. Here it is loading topsoil into an International dump truck from a stockpile. The 10-wheeler can just about handle two scoops of the material, which will be used for finishing berms and other areas to be planted. During grading, the 375A also loaded shot rock.



The extensive asphalt curbing work on this job was handled by two Miller Curbuilders, made by Miller Spreader Corp., Youngstown, Ohio. This one is being readied for work.



A Cat motor grader, equipped with a special boot to keep material from spilling off the end of the blade, dresses up the topsoil on the ditch slope outside the shoulder.

(Continued from preceding page)

the aggregates were stockpiled.

A Michigan 275A tractor shovel fed the aggregates from the stockpile to a trap, and a belt conveyor fed them to the 7 x 28-foot dryer. The dried material went by way of the belt elevator to the gradation unit atop the tower and thence through the bins and weigh buckets to the pugmill.

Asphalt was delivered in truck transports and stored in a 20,000-gallon tank that was heated electrically. The paving mix contained 82 per cent asphalt.

Better service accessibility alone makes the "Euc" C-6 your best tractor buy

In the Euclid C-6 crawler you get the advantages of job proved components and years-ahead engineering that keeps down-time and operating cost to the absolute minimum. You get unitized assembly of major components and service accessibility that is unsurpassed by any crawler... replacement labor costs are well below those for comparable tractors. For example, complete removal and replacement of a C-6 radiator takes less than one third of the time required for the same work on a competitive machine.

With easy accessibility for servicing and maintenance, the C-6 gives more work-time on the job... steps up production... helps beat the profit squeeze by cutting operating costs to a new low.

EUCLID Division of General Motors
Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio
and Lanarkshire, Scotland

*Full-power shift... this Euclid C-6
crawler responds like nothing
you've ever touched!*

Get all the facts and figures on
the C-6... you'll find low operating
cost plus proven reliable performance
make it your best tractor investment

The plant regularly produced the asphaltic mixes at rates in excess of 200 tph. In fact, the average output was 1,546 tons per shift, and these were practically all 8-hour shifts.

A fleet of seven semitrailer dump units pulled by Ford C750 and International 190 trucks hauled 17.5 to 20-ton loads of the mix to the pavers. Two pavers, a Cedarapids and a Barber-Greene, laid the mix.

The 38-foot finished roadway consists of two 12-foot travel lanes flanked by 4 and 10-foot shoulders inside and outside respectively. To attain the proper edge slopes, crews laid the first course 39 feet wide in

three passes. The Cedarapids paver laid a 16-foot outside lane and then joined the Barber-Greene to lay the 11 and 12-foot lanes. For the 38-foot second lift, the 11-foot lane was cut to 10 feet. Both courses were laid to 0.15-foot compacted depth.

Build bituminous curb

Where it was desirable to control the flow of water over the edge of the pavement to prevent erosion of the embankment slopes, a bituminous curb was constructed just outside the shoulder line. In these areas, it was necessary to increase the width of the pavement by 15 inches in order

to accommodate the curb.

The bituminous curb was formed from the hot-mix by a pair of Miller Curblders. These self-propelled machines place, shape, and compact the material as they move along.

On the roadway, the bituminous concrete was given its breakdown rolling by a pair of Gallion 10-ton tandem rollers that worked close behind the pavers. A Seaman-Andwall Model 5620 14-ton rubber-tire compactor provided the intermediate rolling to attain the required density. The finishing was done by a Gallion 3-axle tandem that ironed out the irregularities left by the other rollers.

When the grading was started, the good topsoil was stripped and stockpiled for use in one of the final operations, the dressing of the ditch and median slopes. The soil was loaded from the stockpiles to trucks by the Michigan 375A tractor shovel. The trucks dumped the material in piles along the edges of the shoulders.

A specially equipped Cat motor grader spread the material from the piles and shaped up the slopes. This rig had an extra-long blade shifted as far as possible to the right. The outer end of the blade was fitted with a boot that kept the soil from running out over the end. The motor grader worked from the paved shoulder, finishing the slopes ready for seeding without leaving any tire tracks.

One perplexing item of the contract was the construction of a number of "sign islands," built outside the paved shoulders. These islands have $\frac{3}{4}$ to 1 slopes protected with rock riprap. Old concrete pavement that was broken up and removed was saved for this riprap. The earth portion of the islands was placed in 6-inch layers and hand-tamped to attain the required 100 per cent density. This was a slow and difficult job.

Traffic islands at interchanges were delineated with concrete curb and gutter, built by a subcontractor, Nolte Co., Moses Lake, Wash. The earth fill in these islands was sterilized to minimize weed growth. The finish 2-inch gravel surface was given a double penetration treatment of cutback asphalt.

The furnishing and installation of guardrail and precast traffic curbs was sublet to the Standard Traffic Controls Co., Spokane. Electric lighting, conduit, etc., were installed by Electric Smith Co., Spokane. The seeding and soil sterilization were handled by Nelson Landscaping Co., Spokane. Fencing of the right-of-way was sublet to the Colorado Fuel & Iron Co.

Personnel

The resident chief for the Idaho Department of Highways over this and other projects in the Coeur d'Alene area is Kurt Luerzer. Working with him on this job were project chiefs Willard Schietz and Jim LePard, and chief inspector Roger Harris. The district engineer for the Coeur d'Alene District is John F. Fearing. The state construction engineer is A. F. Rath, and the state highway engineer is G. Bryce Bennett.

The general superintendent for Cherf Bros. & Sandkay Construction Co., Inc., is D. J. Thompson. The job superintendent on this project was Grant Peacock. The excavation foreman was Louis Howard, and the labor foreman was "Buck" Collins. The office manager was Richard Downs.

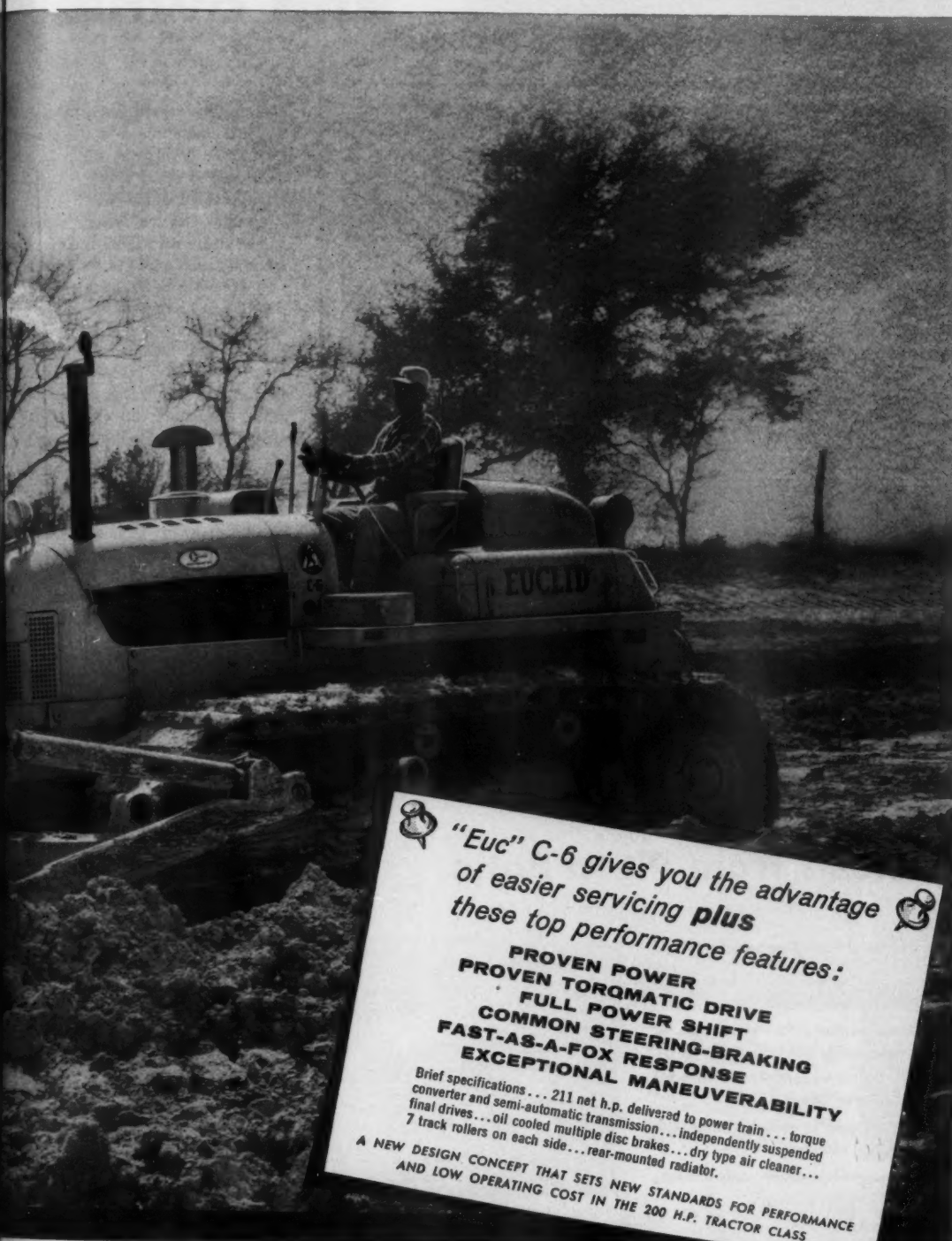
On the bituminous-paving operations, J. W. Pieratt served as superintendent for the L. W. Vall Co. On this crew, Frank Wagner was foreman of the asphalt plant, and Lee Floyd was the laydown foreman. THE END

"Euc" C-6 gives you the advantage of easier servicing plus these top performance features:

**PROVEN POWER
PROVEN TORQMATIC DRIVE
FULL POWER SHIFT
COMMON STEERING-BRAKING
FAST-AS-A-FOX BRAKING
EXCEPTIONAL MANEUVERABILITY**

Brief specifications... 211 net h.p. delivered to power train... torque converter and semi-automatic transmission... independently suspended final drives... oil cooled multiple disc brakes... dry type air cleaner... 7 track rollers on each side... rear-mounted radiator.

A NEW DESIGN CONCEPT THAT SETS NEW STANDARDS FOR PERFORMANCE AND LOW OPERATING COST IN THE 200 H.P. TRACTOR CLASS



EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

For more facts, use Request Card at page 18 and circle No. 296

A new look in field offices is presented by this elaborate headquarters for Michigan Consolidated Gas Co.'s 32-story office building in Detroit's Civic Center. It combines offices for contractors, subs, and architect, plus upper-level viewing facilities for sidewalk superintendents.



Plush field office benefits contractor and owner

Advantage the architect that facilities

the available efficiently neater work for equipment

The glass the second quarters glass and from which view the dated Gas potential construction with a better techniques construction

The field a 28 x 144- wood-siding side of the tion site. T 28 x 28-foot area.

At the g sufficient o tractors an tioned area well lighted both sides toilet facil floor plan. through in side of the

The sid quarters are the const The sidewa tioned com construction picture win recorded ex tion techn semiclassic interrupted b cerning the He may wa card-carryi walk Super

Perhaps ture of the simulated w walk side o These alim cate the fac construction ters, the win on the main

Less than a decade ago, a field office was little more than a drafty shanty. Dust sifted down from the roof, and light filtered dimly through the few grime-covered windows.

In those days, a curious passerby had to strain his ingenuity as well as his neck to get a look at the construction. If he was lucky, he might find a knothole or a crack in the fence bordering the project.

Now, this has largely changed. Field offices are becoming as well lighted and as spacious as any home office. Spectators can view the construction in air-conditioned comfort through plate-glass windows.

One of the most elaborate of such facilities now graces the site of the construction of Michigan Consolidated Gas Co.'s 32-story office building in Detroit's Civic Center. The plush field headquarters combines offices for the contractors and architect with viewing facilities for sidewalk superintendents.

The one-stop field headquarters has several advantages for construction personnel. With contractors, subcontractors, and architect located in the same building on the site, coordination among the different groups is greatly facilitated. With one headquarters building, rather than a scattering of several construction shacks,



A passerby takes a look at the scale model of the new building on display in a front window of the field headquarters. Another window shows the steel-erection schedule.



One of Michael's Fuller-equipped Reo F-505 6 x 6 OH Transit Trucks. The power is transmitted through a Fuller R-35 7-speed ROADRANGER to a 2.55:1/1.00:1 transfer case and 7.59:1 front and 7.34:1 rear axles.

R-35 ROADRANGERS from Pit to Patio

"We have more than doubled our business in the last three years," Vern Michael, owner of Michael Concrete Products, Inc., Loveland, Ohio, says. "Since we bought our first big Fuller-equipped Reo in 1957, our trucks always come through on deliveries. That Fuller R-35 ROADRANGER Transmission should be given a major portion of the credit for this performance. It has the get-up-and-go we need to get thru the rough construction sites where we operate."

Fuller R-35 RoadRanger features:

- No gear splitting — 7 selective and progressive gear ratios
- Easier, quicker shifts — closely spaced, and equal ratios in the operating range
- One shift lever controls all 7 forward and 1 reverse speeds
- Engines work in peak hp range with greater fuel economy
- Compact transmission—only 375 lbs., 26-25/32 inches in length

RATIOS			
Gear	Std.	Opp.	5-Step
Seventh	1.00	1.00	
Sixth	1.33	1.24	*33 24"
Fifth	1.79	1.67	34.8
Fourth	2.42	2.25	34.8
Third	3.30	3.06	46.6
Second	4.90	4.55	67.3
First	8.30	7.62	
Reverse	7.63	7.09	
Weight	375 lbs.		
Oil Capacity	34 quarts		

FULLER TRANSMISSION DIVISION
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For more facts, use Request Card at page 18 and circle No. 297



Advantages to the builders of the project include ease of coordinating work among the architect and different contractors and subs, in addition to well lighted offices that facilitate work. This is the office used by the architect on the job.



Another advantage to the owner, aside from the more efficient work being turned out, is the good will of the sidewalk supers. Spectators—the buying public—hear recordings on features of construction and the benefits of gas heating.

the available space on the site is more efficiently used. This makes for a neater work area, with more room for equipment and for storage.

The glass-enclosed viewing area on the second floor of the field headquarters gives spectators a comfortable and convenient vantage point from which to watch the construction. By encouraging the public to view the work, Michigan Consolidated Gas Co. gains friends among potential buyers of its product. The construction industry gains a public with a better understanding of the techniques and problems of building construction.

Unique features

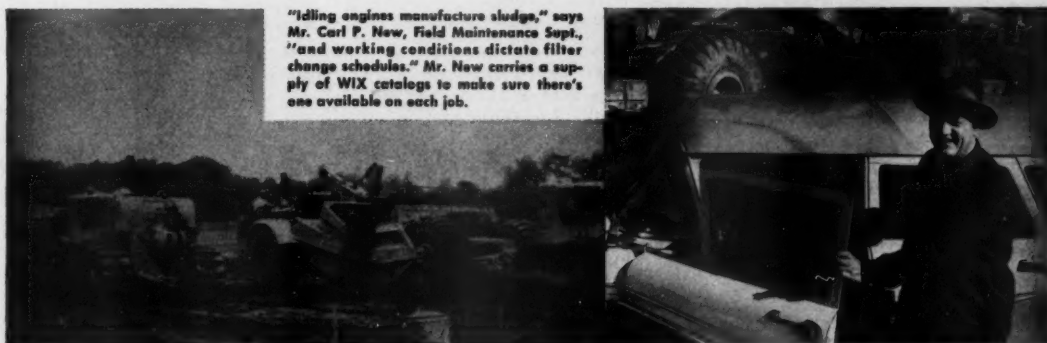
The field headquarters building is a 28 x 144-foot wood-frame and plywood-siding structure built along one side of the 200 x 205-foot construction site. Topping the first floor is a 28 x 28-foot glass-enclosed viewing area.

At the ground-floor level, there is sufficient office space for seven contractors and the architect. The partitioned areas are heated, and they are well lighted by banks of windows on both sides of the building. Modern toilet facilities are included in the floor plan. Personnel enter the offices through individual doors on the site side of the building.

The sidewalk superintendents' quarters are even more luxurious than the construction superintendent's. The sidewalk super sits in air-conditioned comfort while he views the construction through floor-to-ceiling picture windows. He may listen to a recorded explanation of the construction techniques. He may listen to semiclassical music, occasionally interrupted by a brief reminder concerning the benefits of gas heating. He may want to sign up to become a card-carrying member of the Sidewalk Superintendents Club.

Perhaps the most spectacular feature of the field headquarters is the simulated window panels on the sidewalk side of a part of the building. These slim hexagonal windows duplicate the facade of the building under construction. On the field headquarters, the windows are made of wood; on the main building, they are made

(Continued on page 78)



"Idling engines manufacture sludge," says Mr. Carl P. New, Field Maintenance Supt., "and working conditions dictate filter change schedules." Mr. New carries a supply of WIX catalogs to make sure there's one available on each job.

J. A. Jones Construction Co. has men and machines all over the world...and a P.M. program goes with them!



Preventive Maintenance is a perpetual operation with J. A. Jones Construction Co., in the shop and in the field.

At right—Mr. R. C. Lum, Equipment Maintenance Supt., discusses filtration with a WIX Field Service Engineer.

FREE

Simplify your filter problems with a survey of your equipment made by a WIX factory trained Filter Specialist. Get the facts on the WIX Preventive Maintenance Record which tells at a glance the performance of every gasoline and diesel powered unit in your spread. Write today!



The J. A. Jones Construction Co. is a name familiar the world over where big projects need big equipment and men who think big. Preventive Maintenance (in many languages) is the byword in the Jones organization. WIX Engineered Filtration has been "on the job" in gasoline and diesel powered equipment, contributing dependable engine protection in this equipment at home and abroad.

WIX offers important P.M. advantages for engineers and contractors. Write for full information today.

WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto
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For more facts, use Request Card at page 18 and circle No. 298

Because versatility counts

HENDRICKSON BROS. COUNTS ON MACKS





Macks move the earth—Hendrickson Bros. uses these versatile B-42S Mack dumpers on this earth moving project at Heckscher State Park, Long Island. Dependability makes Macks first choice with experienced operators.

On fast-changing Long Island, N. Y., Hendrickson Bros., Inc. takes on a unique "mix" of construction projects impossible for a less versatile organization. From its Valley Stream, Long Island headquarters, Hendrickson supervises operations ranging from storm sewer projects to major super-highway construction . . . from asphalt paving to involved railroad grade crossing eliminations in busy suburbs of Greater New York City.

Hendrickson's highly regarded reputation for "getting the job done" is due in part to its insistence on working with quality equipment. As Milton A. Hendrickson, President, puts it, "Construc-

tion jobs demand a lot of a truck. We use Macks because we're sure they'll do each job the way we want it done. To our way of thinking, an investment in a Mack is one that pays off."

Mack trucks pay off because of Balanced Design—the exclusive Mack concept in which every major component is *Mack built* to work together for the highest efficiency and long life. Engines, clutches, transmissions, axles, drives — all major components are *made by Mack* for Mack trucks alone . . . made to the highest standards of the industry to work together for maximum efficiency and long life.

Whether you use one truck or dozens, you'll find a profitable difference in using Macks. Your Mack representative is qualified by knowledge and experience to help you determine the Mack models that most economically meet your trucking needs. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

8347

MACK
FIRST NAME FOR
TRUCKS

Good going or bad—Speeding down a stretch of new parkway or slogging off highway to the dump site, Macks are assured maximum traction, thanks to the exclusive Mack Balanced Bogie with automatic Power Divider interaxle differential, an example of all-around Mack versatility.



For more facts, use Request Card at page 18 and circle No. 299

Sidewalk supers look on from the balcony of the second-floor viewing area as a Bay City motor crane sets the first column of the structural-steel frame. All field connections in the structure will be welded.



in the bidding of the general contract. (The building was completed prior to the time the general contract was let.) The general contractor will be expected to raze and salvage the building when excavation for the underground parking garage starts in the spring of 1962. By December of that year, the entire project is expected to be completed.

Minoru Yamasaki of Birmingham, Mich., and the firm of Smith, Hinchman & Grylls, Associated Architects, are the designers of the office building and the field headquarters. The general contractor is Bryant & Detwiler of Detroit.

THE END

(Continued from page 75)

of precast concrete. The unique concrete frames form a curtain wall for all four sides of the 430-foot tower.

In a showcase window at the public entrance to the field headquarters is a scale model of the new building. Also on display for pedestrians is a schedule that diagrams the planned progress of steel erection by American Bridge Division of United States Steel Corp.

Who pays for the \$40,000 field headquarters building? The general contractor gets the building when he is awarded the contract. The building, therefore, is a price consideration

Engineering education group numbers 10,000

■ For the first time in its history, the American Society for Engineering Education, Urbana, Ill., has achieved a membership of 10,000. Donald R. Brutvan, professor of chemical engineering at the University of Buffalo, has been accepted as the 10,000th member of the organization.

ASEE was founded in 1893 to study and improve education in the engineering field. Its present membership includes representatives from schools, colleges, universities, research laboratories, industry, and government, in the United States and at least 46 foreign countries.

International group studies Ohio highways

■ Twenty-nine administrative highway engineers representing ten different nations recently began a 14-week study of various operations in the Ohio Department of Highways. The study is under the sponsorship of the International Cooperation Administration, working through the U. S. Bureau of Public Roads.

The men will be assigned to work with regular engineers of the department in such areas as bridge design, hydraulics, construction, planning, traffic, and maintenance. The practical experience will follow a 2-month orientation course at the Ohio State College of Engineering.

ELECTRODES— all you need —fast! locally!



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What type of electrodes you need—mild steel, low alloy, low hydrogen, iron powder, stainless, hardfacing,

Your Airco Distributor offers electrodes for over 100 different types of work. Ask him—he'll recommend exactly the one you need to do the job right. Resealable "Pop" cans for stainless and "Barrier Cartons" for low hydrogens. Only your Airco Distributor gives electrode service like this.

Choose from AIRCO quality electrodes, arc welding equipment and arc welders, gas welding and cutting equipment—gas-shielded arc welding process equipment—flame cutting machines—high purity industrial gases.

Call your nearby Airco Distributor. He's listed in your Classified Telephone Directory under "Welding Equipment and Supplies."

AIR REDUCTION

...represented by over 700 Authorized Airco Distributors from Coast to Coast



For more facts, circle No. 300

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REQUIRED?

McKISSICK OFFERS
• SPECIAL TESTS
• SPECIAL DESIGNS
• SPECIAL MATERIALS
• SPECIAL ENGINEERING

A complete service to meet your individual block requirements.

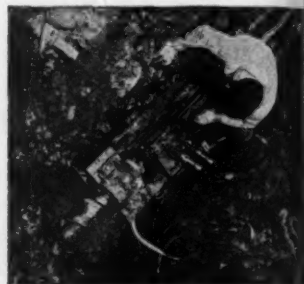
A specific test for M. A. N. Gustausburg, Germany. Equipment designed for Tokai-Mura project, Naka-Gun Ibaraki, Prefecture, Japan.

McKissick

Division of
AMERICAN
HOIST

For more facts, use Request Card at page 18 and circle No. 301

ELIMINATE DITCHING... TUNNELING



10-TD DRILLS 3" - 10" DIAMETER
16-TD DRILLS to 16" DIAMETER
24-TD DRILLS to 24" DIAMETER



SALEM TRENCH DRILLS...

• You'll complete more pipeline and ductwork jobs in less time with a Salem Trench Drill. They drill a horizontal hole and advance casing simultaneously. Hole is fully supported all the way. Important traffic keeps moving. You tie up minimum amount of equipment. Your costs are lower... profits higher.

Free...

Salem trench drill bulletin gives complete facts. Yours on request.



THE
SALEM TOOL CO.
5, ELLSWORTH AVE., SALEM, O.

For more facts, circle No. 302

CONTRACTORS AND ENGINEERS

PRODUCT PARADE

For further information on any of the products described in the following advertisement, circle the designated number on the Request Card at page 18.

Excavator is marine, crawler-mounted rig

A combination crawler or marine-mounted excavator designed to provide contractors with a versatile, heavy-duty rig is announced by Manitowoc Engineering Corp.

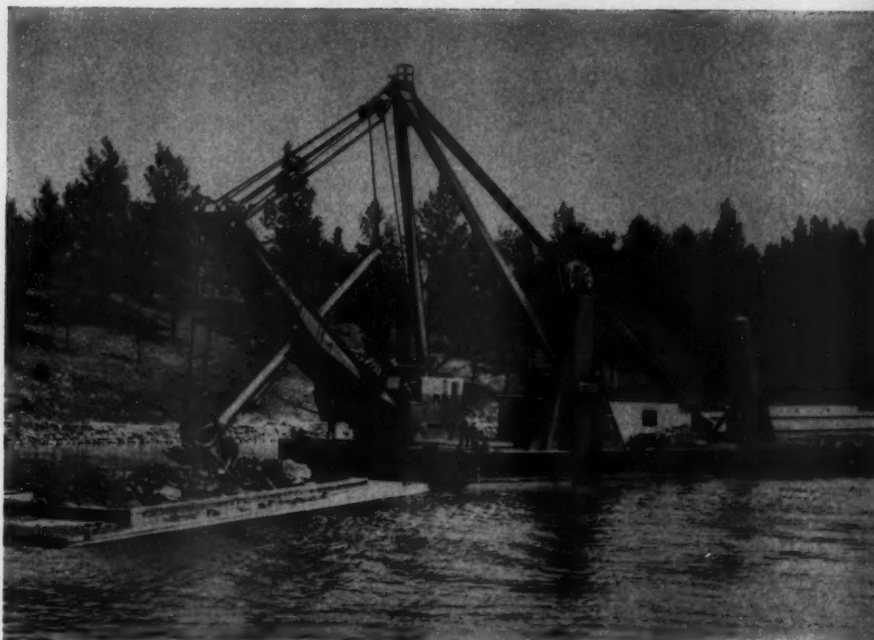
The new Model 4600 Vicon dredge can achieve full capacity as a shovel, clamshell, dragline, trench hoe, or crane—operating as a crawler rig or as a marine-mounted dredge.

Several booms and inserts are available for extra-long dragline, clamshell, or high-lift operations. Heavy-duty booms for lifts of up to 200 tons are also available.

Features of the marine hull include a diesel engine with torque converters to provide automatic application of power for raising or lowering the spuds, and for operating the deck winch. Another feature, the walking spud, is completely powered—enabling the operator in the pilot house to move the dredge forward or backward. The walking spud is pivoted hydraulically.

The versatile 130-inch dredge has a 50-foot beam and a draft of 5 feet, displacing 800 tons.

Write to Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card at page 18. Circle No. 116.



Entirely new design for truck cranes

Baldwin-Lima-Hamilton Corp. has announced four new rigs said to represent a new approach in truck-crane design and features.

Designated as Type 250-T (left), of 25-ton capacity; Type 300-T, of 30-ton capacity; Type 350-T, of 35-ton capacity; and Type 450-T, of 45-ton capacity, the four new models are completely new from the ground up.

The Lima 8 x 4 carrier, standard on all models, utilizes 4-axle design for lighter axle loadings and balanced weight distribution. The frame is of heavy-duty alloy steel.

Two pin-connected-type booms are available for all models. Maximum crane booms range from 170 feet on the Type 250-T to 180 feet on the 450-T; boom and jib combinations, from 180 to 200 feet.

The Type 250-T can travel over the highways in most states without a permit. All four models are designed so that both outrigger boxes, front and rear counterweights, boom point, and base sections can be easily removed to meet weight limitations.

Write to Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Dept. C&E, Lima, Ohio, or use the Request Card at page 18. Circle No. 115.





The new Oliver 71 backhoe and 568 loader are shown on the company's Model 550 utility wheel tractor.

New loader, backhoe for wheel tractor

The new Model 568 front-end loader, with a variety of other front-end attachments, and a new Model 71 rear-mounted, quickly removable backhoe have been announced by Oliver Corp. for use on its Model 550 utility wheel tractor.

The new loader has 3,700-pound breakaway and 1,800-pound lifting capacity, and is available in bucket sizes of $\frac{1}{2}$, $\frac{3}{4}$, and $\frac{5}{8}$ cubic yard.

Front-end attachments for the loader include a backfill blade, a tool bar, a fork-lift, and a crane. The new backhoe has bucket sizes ranging from 12 through 36 inches in width, with capacities of 2 to $5\frac{1}{2}$ cubic feet.

For further information write to the Oliver Corp., Dept. C&E, 400 W. Madison St., Chicago 6, Ill., or use the Request Card at page 18. Circle No. 19.

Starter adds versatility to submersible pump

A new starter for use with the Bibo 3 electric submersible drainage pump has been developed by Flygt Corp. The new attachment allows the pump to be run on 220-volt single-phase power without the necessity of changing the motor.

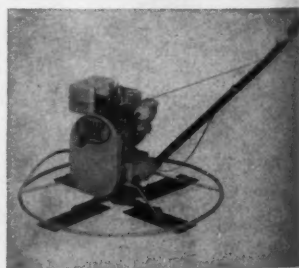
The Bibo 3-inch pump was previously equipped for 3-phase 550, 440 and 220-volt lines.

The manufacturer claims the starter will make the Bibo 3 much more flexible, in that a pump of this size will be able to employ the widely used 220 single-phase voltage. The starter is said to be ruggedly constructed and of compact design.

For further information write to Flygt Corp., Dept. C&E, Hoosick Falls, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 118.

Power trowel features declutching mechanism

A new 36-inch power trowel available with either a 3 to 6-hp gas engine is announced by Muller Machinery Co. Fitted with three or four blades, the new machine is reported to have an improved type of declutching mechanism that makes engagement of the blades easier and gives the operator complete control over the blade operation.



The handle of the trowel is long and adjusts to the height desired by the operator, making handling of the trowel easier and providing better control. The stationary guard ring allows operation of the power trowel close to sidewalks and baseboards.

For further information write to Muller Machinery Co., Dept. C&E, Box 248, Metuchen, N. J., or use the Request Card at page 18. Circle No. 120.

CONTRACTORS AND ENGINEERS



USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

POWER...that's ready when you are

With Homelite Carryable Generators on the job, you'll always have a dependable source of power...that's ready when you are...to operate labor-saving tools, brilliant floodlights and other electrical equipment. You can choose from Homelite's famous-for-quality 2-cycle engine driven models. Or pick from Homelite's new line of economy-priced 4-cycle engine-driven generators (available for operation on gasoline or LP gas). There are 115 volt, 115/230 volt and high-cycle units. Sizes from 1500 watts to

5000 watts. Every one constructed for heavy-duty operation, light weight for easy carrying and featuring Homelite's exclusive TOOL-SAVER voltage control.

Write for details today. We're ready when you are to demonstrate any model Homelite generator on your job.

Illustration shows Homelite Model 42A115/230 generator. Capacity: Up to 5000 watts of 115 and 230 volt, 60 cycle AC power. Engine: 4-cycle Wisconsin



Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

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CONCRETE VIBRATORS
PUMPS • GENERATORS • BLOWERS

HOMELITE: A DIVISION OF TEXTRON INC.—9508 RIVERDALE AVE., PORT CHESTER, NEW YORK • IN CANADA • TERRY MACHINERY CO., LTD.
For more facts, use Request Card at page 18 and circle No. 303

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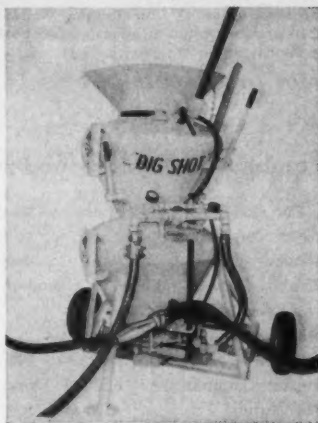
The new Airplaco Big Shot concrete gun is a high-production unit with capacities from 5 to 14 cubic yards per hour.

New concrete gun places up to 14 yards per hour

A new concrete-gunning machine, the Big Shot, is announced by Air Placement Equipment Co.

According to the manufacturer, the new unit achieves high production because of the following features: faster cycling with 15-inch spherical slide valve; larger, 5-cubic-foot hopper capacity; and positive feed control.

Production rates range from 5 cubic



yards per hour with 315 cfm of air, 1½-inch-ID material hose placing material with maximum aggregate size of ¾ inch through an Airplaco A-900 nozzle, up to 14 cubic yards per hour with 600-900 cfm of air, 2-inch-ID material hose and aggregate up to ¾ inch with an Airplaco A-901 nozzle.

For further information write to Air Placement Equipment Co., Dept. C&E, 1000 W. 25th St., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 16.

Self-sharpening end bits for bulldozer models

Self-sharpening end bits of forged steel are now available for the Caterpillar No. 7A and No. 7S bulldozers. These optional attachments are said to have improved penetration and are recommended by the firm for heavy-duty applications.

The leading edge and extended tip of the new bits are shaped to be self-sharpening as wear occurs. This retains the optimum penetrating angle throughout the life of the end bit, according to the company.

Outer portions of the bits are specially hardened to provide longer wear and extended service life. The center reportedly remains "tough" for greater strength.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 117.

Power-shift transmission offered in new series

A new power-shift transmission, the Series TD-44-400, has been announced by Twin Disc Clutch Co. The new design is a 4-speed-forward, 4-speed-reverse box with full power shifting in all speeds. It is designed for engines developing from 75 to 108 net horsepower.

The transmission's simple countershaft arrangement includes multiple-disk, oil-actuated clutches that energize the constant-mesh spur-gear trains. Speed changes are effected by duplex clutches that function as range clutches. Two large individual clutches handle direction changing.

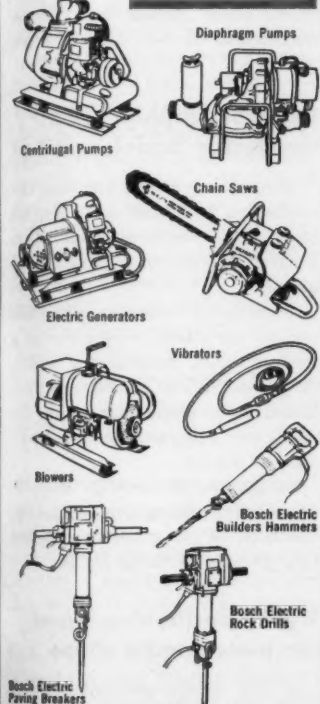
For further information write to Twin Disc Clutch Co., Dept. C&E, Racine, Wis., or use the Request Card at page 18. Circle No. 32.

New line of buckets with linkage system

Erie Strayer announces the addition of concrete buckets to its line of material-handling equipment. The new buckets are said to incorporate a new design principle that replaces gears and cogs with a linkage system, resulting in smooth, positive discharge control and easier operation.

Erie concrete buckets come in both upright and laydown models. Both types are available with manual or air control.

For further information write to Erie Strayer Co., Dept. C&E, P. O. Box 1031, Erie, Pa., or use the Request Card at page 18. Circle No. 13.



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford
NEW JERSEY: North Arlington, Woodbridge
NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • **MAINE:** Orono
MARYLAND: Baltimore • **MASSACHUSETTS:** Boston (Allston) • **PENNSYLVANIA:** Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • **VIRGINIA:** Arlington, Richmond, Roanoke • **WEST VIRGINIA:** Charleston, Clarksburg
SOUTH: GEORGIA: Atlanta • **FLORIDA:** Jacksonville, Miami • **LOUISIANA:** New Orleans (Metairie), Shreveport (Bossier City)
NORTH CAROLINA: Charlotte, Raleigh
OKLAHOMA: Oklahoma City • **TENNESSEE:** Knoxville, Memphis • **TEXAS:** Dallas, Lufkin
MID-WEST: ILLINOIS: Chicago (Stone Park)
INDIANA: Indianapolis • **MICHIGAN:** Detroit, Grand Rapids • **MINNESOTA:** St. Paul • **MISSOURI:** Kansas City, St. Louis
NEBRASKA: Omaha • **OHIO:** Cincinnati, Cleveland, Toledo • **WISCONSIN:** Milwaukee
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In Canada:
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For more facts, circle No. 304

ESSICK

VIBRATING COMPACTORS

ESSICK VR-54TE VIBRATING COMPACTOR TRIPLEX HOOK-UP

100% COMPACTION IN TWO PASSES!

COSTS DOWN—PROFITS UP WITH ESSICK VIBRATING COMPACTORS

John Heckle, General Superintendent for S. Cantor Associates Inc., on the Sayre Woods South Project in Madison Township, New Jersey, says: "we put in borrowed fill on this 2000 unit housing development to meet FHA requirements which called for 95% compaction. A triplex hook-up of Essick VR-54TE Vibrating Compactors was used, pulled by a D-4 tractor with the material being put down in 6 inch lifts. We used two pushers, a dozer, a grader, and 6 caterpillar pans to keep up with the Essick Vibrating Compactors."

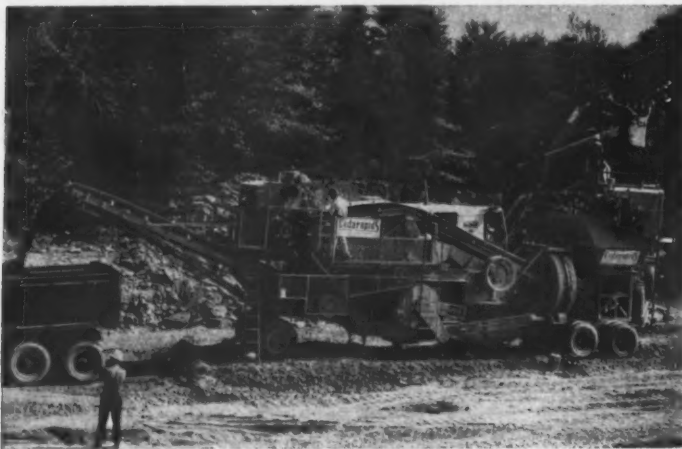
OVER 100% COMPACTION was achieved IN TWO PASSES of this work unit, and we compacted approximately 8000 cubic yards of fill per nine hour day in a six day week. This Triplex Unit of Essick VR-54 Vibrating Compactors not only allowed us to cut our costs tremendously, but we completed the compaction phase way ahead of schedule."

ESSICK VIBRATING COMPACTORS ARE CUTTING THOUSANDS OF DOLLARS DAILY FROM CONTRACTORS COSTS! ASK FOR PROOF — SEE YOUR ESSICK DEALER NOW FOR A DEMONSTRATION.

9 Models of Vibrating Compactors from 13" to 72" widths
Tandem Rollers from ½ to 6 Tons

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1950 SANTA FE AVENUE
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ELIZABETH, NEW JERSEY
Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 305



A Cedarapids Senior Commander Model 543 portable primary plant produces aggregate for a new Pennsylvania highway project.

Combine 18 tandem models in new crusher series

For easier selection of the correct plant for a specific crushing and screening job, Iowa Mfg. Co. has combined 18 models of tandem crushing plants into a new Commander Series.

The new series will include the Pitmaster Commander, Models 111 and 211; Junior Commander, Models 322, 332, 422, and 432; Senior Commander, Models 443 and 543; Super Com-

mander, Models 555 and 645; and the Master Commander, Models 557, 667, and 667. The Super and Master Commander plants will be available with either mechanical or semi-electric drives.

These models offer a choice of crusher sizes that may be combined to meet specific crushing conditions and product specifications. The Super and Master Commander models feature a twin-jaw crusher for high primary crushing capacity. Cedarapids horizontal vibrating screens are used on all models.

Tonnage output of the plants in the Commander Series, when producing minus 1-inch material, ranges from the Pitmaster Commander's 75 tph to the Master Commander's 700 tph.

For further information write to Iowa Mfg. Co., Dept. C&E, 916 10th St. E., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 28.

Vibratory asphalt roller, compactor model modified

Vibro-Plus Products, Inc., has announced a modification to the hooks for its Dynapac Model CL-21 vibratory asphalt roller and soil compactor.

These hooks, formerly a permanent part of the CL-21, now come as a separate unit, making for easier, faster loading and unloading. In addition, the manufacturer states, the CL-21 now has vastly improved balance on the job.

For further information write to Vibro-Plus Products, Inc., Dept. C&E, Stanhope, N. J., or use the Request Card at page 18. Circle No. 26.

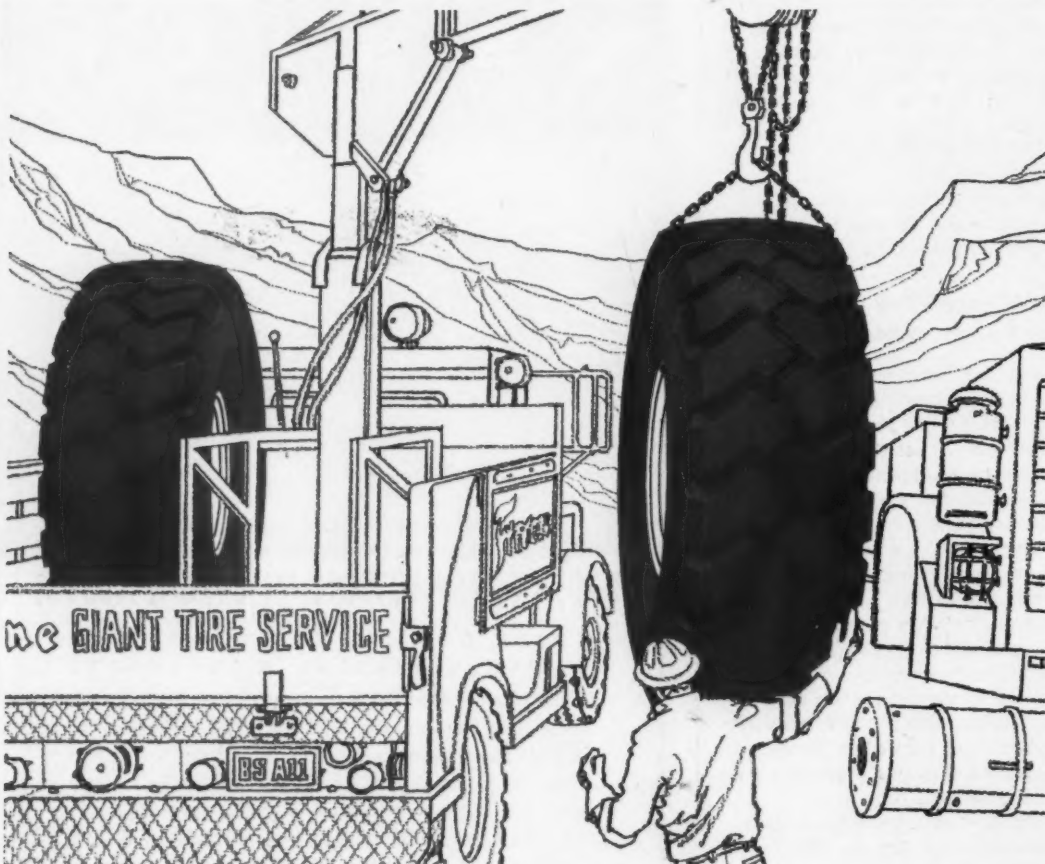
Engine-positioning stand for maintenance shops

A new engine-positioning stand that handles engines weighing up to 1,200 pounds and allows the mechanic to work from any angle is announced by Owatonna Tool Co.

Engines are mounted to the stand by bolting the appropriate OTC engine adapter bracket to the engine while it is on a chain hoist, then positioning the engine against the stand and bolting the adapter bracket to the stand. A self-locking, matched worm-and-sector gear set, with 8-inch crank, makes turning safe and easy, the company reports.

The OTC No. 1700 engine stand weighs 135 pounds, and it can be bolted permanently to the floor or made mobile by adding an optional OTC stand caster assembly.

For further information write to Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 35.



Firestone boosts production with TOUGHER TIRES AND 24-HOUR SERVICE

1. **Firestone Giant Tires** give you added insurance against penalty-day losses! That's because extra hours of use are built into every SUPER ROCK GRIP tire. With bonus plies of Shock-Fortified nylon, the body is armored against impact breaks. And Firestone Rubber-X is super-toughened for work over sharp rock and shale.
2. **Firestone Giant Tire Service** specialists, with fully equipped trucks, stand 24-hour duty to keep production up. Put one of these men on your project and you can forget tire maintenance problems. He'll solve them—often before they occur!

Find out today how Firestone's Giant Tire, Giant Service Team can reduce your downtime losses. See your Firestone Dealer or Store. Or write Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Company, Akron, Ohio.

Always Specify Firestone Tires When Ordering New Equipment.

Firestone

FIRST IN OFF-THE-HIGHWAY TIRE NEEDS

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For more facts, use Request Card at page 18 and circle No. 306

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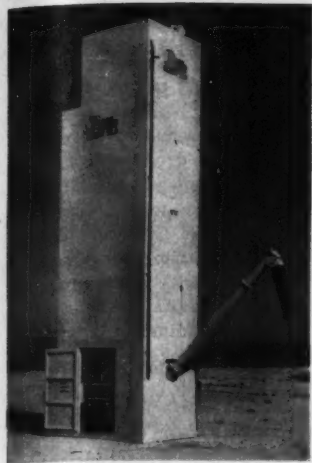
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This Ross portable cement silo incorporates a pneumatic system for receiving cement from a bulk truck.

Silos receive cement by pneumatic system

Ross Porta-Plant, Inc., has announced two models of pneumatic-receiving cement silos.

The design of these portable units eliminates the need for a vertical elevator, incorporating a pneumatic system for receiving cement from a pneumatic bulk truck. A 20-foot x 9-inch screw on a 45-degree angle discharges the cement from the weigh batch bin into the ready-mix truck. The silos are complete with air-controlled gates, a 52-cubic-foot weigh batch bin, 5,000-pound scales system, air compressor, and aeration system. They are available with semiautomatic or fully automatic controls.

For further information write to Ross Porta-Plant, Inc., Dept. C&E, P. O. Box 446, Brownwood, Texas, or use the Request Card on page 18. Circle No. 4.

Blaster increases range of seismic exploration

A compact new blaster for use with the MD-1 engineering seismograph has been introduced by Geophysical Specialties Co.

A few feet of primacord, wrapped around a blasting cap and placed at a measured distance from the MD-1 geophone, can be detonated automatically by the blaster to give seismic readings to a depth of 200 feet and more, depending on the subsurface composition.

The MD-1 engineering seismograph records the time in milliseconds from the moment of the blast to the moment the first subsurface shock wave reaches the geophone. By taking readings at various distances, these recorded times can be charted. A simple formula makes it possible to determine the velocity of the shock wave through each layer of material and thus determine the type of material.

For further information write to Geophysical Specialties Co., Dept. C&E, 1409 Robinwood Drive, Hopkins, Minn., or use the Request Card at page 18. Circle No. 55.

For more facts, use Request Card at page 18 and circle No. 307

Floor deck doubles as form and reinforcing

A new steel floor deck that provides concrete reinforcement without bars while it serves as a permanent form is announced by Inland Steel Products Co.

Because separate bars, forms, and shoring are eliminated and more economical gages of steel can be used, the new system compares favorably in cost with traditional methods of

reinforced-concrete construction, the manufacturer reports.

Substantial time savings are said to be possible because Hi-Bond steel decking goes in fast and acts as a working platform right from the start. Time is also saved by the elimination of the usual shoring operations, both before and after the concrete work.



Cross section of Inland Hi-Bond steel floor deck.

For further information write to Inland Steel Products Co., Dept. C&E, P. O. Box 394, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 49.



How to keep them out of the graveyard longer

Why do some engines die before their time? The answer could be in the lubricating oil you are using. Hundreds of documented case histories show that fleet owners have added up to 50% to the life of their engines . . . using RPM DELO Oil. Special compounding cleans and protects vital engine parts . . . reduces over all maintenance costs. In fact, many fleet owners say "RPM DELO" is preventive maintenance. Try it. Your equipment will be rolling for a long time to come.

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TRADEMARKS "RPM DELO" AND CHEVRON DESIGN





The Cutler No. 25 Black-Topper is a portable hot-mix plant said to incorporate a number of big-plant features.

Announce new, portable batch-type asphalt plant

A new portable, batch-type hot-mix plant, the No. 25 Black-Topper, is announced by the Cutler Engineering Co.

Big-plant features of the new unit are said to include a 5-foot-diameter x 10-foot-long dryer, inclined at a 4-degree angle; a polycone dust collector with eight 9-inch heavy-duty cyclones; batch operation using dual batching hoppers mounted on beam-type scales; a jacketed Buffalo asphalt meter coupled to a Viking heated asphalt pump to inject the as-

phalt into the pugmill under pressure; dual cold-aggregate storage bins; a heavy-duty twin-shaft pugmill; and a folding hot elevator.

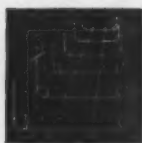
The plant can be erected or dismantled in less than an hour, according to the manufacturer, and travels as a legal semitrailer load.

For further information write to Cutler Engineering Co., Division of Asphalt Equipment & Engineering Co., Dept. C&E, 5435 W. 63rd St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 48.



"ON THE JOB WHEN YOU WANT THEM!"

SYLGAB
STEEL and
WIRE ACCESSORIES
for Fast
FIREPROOFING
of Structural Steel



**RIGID
BEAM
CLIP**

5' lengths
— installed with lightning speed.
Made of #12 or #10
gauge galvanized.

**HAUNCH
STIFFENER**

for beams over
16" deep. Made
of #10 or #12 gauge
galvanized wire.



**TOGGLE
HANGERS**

More rigid than
any wire. Used in
conjunction with

SYLGAB SNAP-ON HAIRPIN CLIP
to tie main and cross furring together.

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

Quality — Service
Ease of Installation

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STEEL & WIRE CORP.

79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS

EXPANSIBLE CLIPS

STRAIGHT AND COIL WIRE

HAIRPIN CLIPS • TOGGLE HANGERS

FORM SPACERS • BAR ACCESSORIES

Request Catalog—Phone or Wire Collect

For more facts, circle No. 308

New lancing powder for tough cutting jobs

A uniformly sized mixture of iron and aluminum powder for powder lancing operations is available from the Linde Co. The toughest materials, including heavily reinforced concrete, can be cut with Linde's powder-lancing process, according to the manufacturer.

Oxweld No. 201 lancing powder consists of iron and aluminum particles blended and mixed to insure maxi-

mum lancing efficiency and protection against lance burnout. It is available in ready-mixed 100-pound drums; no on-the-job mixing of separate iron powder and aluminum powder is required.

For further information write to Linde Co., Division of Union Carbide Corp., Dept. C&E, 270 Park Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 64.



TRICROME® RE-RING SETS are self-conforming and pre-lapped for quick seating and light-tight fit. Three of the four rings per piston are full-chromed.

NEW PARTS KITS factory-engineered for WISCONSIN ENGINES

They're brand new — and packaged for safe, easy handling and big savings. Above all, the Wisconsin kits are factory-engineered for Wisconsin Engines only.

Our TriCrome® sets enable you to re-ring moderately worn, tapered, or out-of-round cylinders for one-third the cost of reboring. And now, you can also buy them in .010", .020", and .030" oversizes for the same price.

The Stellite valve, solid seat, and valve rotator conversion kit saves you the cost of two to four ordinary valve jobs for only \$12.85 per valve... and our high-temperature safety switch automatically protects your Wisconsin Engine against burn out through overheating. The cost, \$5.95.

Complete kits assure uniform like-new performance. And they cost less than if you bought the parts individually. Ask your Wisconsin Engine Service Station about them — and prices. Or send for Parts Bulletin Form S-280. Write Dept. C-21.

CHECK THESE TOO:

- 4-Pack Oil Filter Cartridge, with gaskets
- Fuel Pumps
- Fuel Pump Repair Kits
- Carburetor Repair Kits
- Major Magneto Repair Kits
- Magneto Point and Condenser Kits
- Spray Paint Kit, with Decals
- Tools to make your job easier

All are attractively priced and packaged!



WISCONSIN MOTOR CORPORATION

MILWAUKEE 46, WISCONSIN

World's Largest Builders of Heavy-Duty Air-Cooled Engines

For more facts, use Request Card at page 18 and circle No. 309

CASTINGS?

That's all we make!

And on hand for immediate delivery are thousands of standard designs such as —



What's more, we have

15,000

patterns from which construction castings can be produced fast.

Our 168 page catalog of Gray and Ductile Iron castings will be sent promptly upon request.

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NEENAH • WISCONSIN

Chicago Office: 5845 N. Wanda Ave., Chicago 31

For more facts, circle No. 310

CONTRACTORS AND ENGINEERS

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AUGUST, 1961

Portable signal light for job-site traffic

An automatic, portable traffic signal said to do the work of two men is announced by Colorado International Associates, Inc. The signal rolls on rubber casters to any position where, operated by a rechargeable 12-volt battery, it controls both foot and automobile traffic.

The base of the Safety-Lite has four large square panels and four



smaller triangular panels on which advertising or safety messages can be inscribed. Either automatically or manually operated, it is said to replace two men ordinarily needed for flagging down traffic at construction sites where one-way traffic is necessary.

For further information write to Colorado International Associates, Inc., Dept. C&E, Farmers Union Bldg., Denver 5, Colo., or use the Request Card at page 18. Circle No. 58.

Offer valveless torch for continuous welding

A new valveless welding torch, said to provide greater economy in gas consumption and reduced operator fatigue because of a centralized control system, is available from the Air Reduction Sales Co.

The Airco Style 725 valveless torch is said to differ from other standard dual-hose welding torches in that needle valves have been eliminated from the torch assembly. A gas mixer is used in conjunction with the modified torch, and flame adjustment is made at the regulators on the gas cylinder or pipeline station. The gas mixer, located between the gas supply and the torch, closes off the fuel mixture whenever the torch is hung on the hanger arm hook.

For further information write to Air Reduction Sales Co., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 44.



Compacting 15 miles of 30-foot-wide streets being refinished at Riviera Beach, Fla., is the job assigned this Gallion 9-wheel self-propelled pneumatic-tire roller owned by Belvedere Construction Co., West Palm Beach. Installation of a new piping system at the resort necessitated the resurfacing job. Belvedere reports it is getting maximum compacting pressure with the big roller, which has a ballast capacity of up to 3,000 pounds wheel load. For further information write to Gallion Iron Works & Mfg. Co., Dept. C&E, Gallion, Ohio, or use the Request Card at page 18. Circle No. 21.

FOUR MOTO-CRANES[®] WORK AT PLATTSBURG MISSILE BASE

Power-Set[®] outriggers major factor in speeding up crane work

A 75-ton Lorain Moto-Crane, MC-760, and three 45-ton Lorain Moto-Cranes, MC-545, all equipped with hydraulically operated Power-Set outriggers, scamper all over a 1600 square mile area around Plattsburg, New York, to service twelve Atlas F intercontinental missile launching complexes.

A joint venture by contractors Raymond-Kaiser-Macco-Puget Sound Bridge is using the four Lorains to unload and load and place extremely expensive and easily damaged pressure vessels, set steel forms, muck out, excavate, and pour concrete for the silos.

It is a 235-mile jaunt around the circuit to visit each of the sites so high speed mobility and fast set up time for lifts are important cost-saving factors.

"Manual outriggers unthinkable"

Leo Leifester, Equipment Superintendent says, "Traveling between 11 track sidings, the cranes must make good time on the highway to keep our demurrage charges down. As soon as a tank is delivered we load it on a truck to release the car. The Power-Set outriggers are an important factor here



because production time makes setting outriggers manually virtually unthinkable. They would take four times as long to set up. The crane then follows the truck to the site and unloads it.

"The fast highway speed of the Lorains keeps travel time to a minimum. The MC-760 moves along at 35 mph to keep up with the truck, and it can negotiate the numerous hills without significant loss of speed. A crane may remain in one spot for three weeks, then might average 15 to 30 miles per day for the next three weeks.

"Any advantages in faster travel time, or quick set up time are translated into more efficient use of our costs."

Lorain Moto-Cranes, equipped with Power-Set outriggers and with many other operating advantages, can do a cost-cutting job for you too. Why not call your nearby Lorain distributor for all the facts—or ask for a demonstration to prove to yourself what Lorains can do. You'll be glad you did.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

A 75-ton Lorain Moto-Crane, MC-760 unloads a 50-ton pressure vessel used for missile fuel storage. It is 44 feet long and 12 feet in diameter. Like a huge thermos bottle, it must be handled with extreme care. Precise crane control and steady footing are required. 120 of these vessels, weighing from nine to fifty tons, must be placed in concrete housings.



One of the three 45-ton Lorain Moto-Cranes, MC-545 stands rock steady on Power-Set outriggers to gently unload a 31-ton pressure vessel for nitrogen and oxygen storage.

LORAIN

DOES MORE
FASTER • FOR LESS

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from $\frac{3}{8}$ - to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6,000-lb., 7,000-lb., and 9,000-lb. operating capacities.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

The forward-tilting hood and fender assembly is a design feature of the new International 400 Series diesel trucks.



Diesel-truck series include 8 new units

Two new series of conventional diesel-powered International trucks have been introduced by the motor-truck division of International Harvester.

Designated as 400 Series models, these new units are offered in D-400 front-axle-forward or DB-400 set-back front-axle design with gross combination weights up to 79,000 pounds. Eight highway or off-highway models are available, with single or tandem-axle drive, trailing or pusher axles, and a broad range of standard and lightweight components. One design highlight of this series

is its one-piece reinforced-fiberglass hood and front fender assembly which tilts forward 90 degrees for easy accessibility to all front-end components.

Standard diesel engine for all models is a 180-hp in-line 6. Nine optional engines are offered, including in-line 6, V-6, or V-8 designs. Horsepower ratings range up to 335.

For further information write to International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 119.

New cationic emulsion for base stabilization

A new type of cationic emulsion—Bitumuls SM-K—has been developed by the American Bitumuls & Asphalt Co. According to the company, the new material is capable of being mixed with dry or damp aggregates, possesses high adhesion to siliceous aggregates, produces mixes that can be immediately compacted without requiring aeration, and develops high early cohesion after mixing.

Bitumuls SM-K is a cationic mixing grade emulsion containing approximately 60 per cent asphalt, a volatile solvent, water, and emulsifiers. The manufacturer reports that the product has excellent pumping and storage stability, and that it can be mixed with dry aggregates without the addition of water.

For further information write to American Bitumuls & Asphalt Co., Dept. C&E, 320 Market St., San Francisco 20, Calif., or use the Request Card at page 18. Circle No. 57.



MONEY MAKING IDEA . . .

Drive, Break, Demolish, or Tamp at any Angle with

VULCAN PORTABLE PILE HAMMER

With accessories for pile driving, pipe driving, concrete breaking, demolition, tamping. Differential acting. Striking parts 100 lbs. 303 blows per minute. Write for Bulletin No. 30-B.

VULCAN DGH-900 SHEETING HAMMER
For steel sheeting, steel bearing piles, concrete bearing piles, wooden piling. Complete line of accessories. Differential acting. Heavy ram—900 lbs. 238 blows per minute. Write for Bulletin No. 35.

VULCAN PILE EXTRACTORS
For pulling sheet steel, wood, concrete, H-beams and pipe piles. NOW ready in a wider range of types and sizes. Write for Bulletin No. 71-E.

Vulcan
Pile Driving and
Extracting Machinery
Since 1852



VULCAN IRON WORKS INC.
CHATTANOOGA, TENNESSEE

For more facts, use Request Card at page 18 and circle No. 312



New fast acting penetrant and rust solvent . . . saves time, trouble, money and tempers. Available in pressurized cans or regular pints and gallons.



SPRAY PRODUCTS CORPORATION
P.O. Box 1988 • Camden 1, N.J.

For more facts, circle No. 313



- ✓ STREET AND HIGHWAY PLANNING
- ✓ SEWER SYSTEM SURVEYS
- ✓ FOR JOB SITE SURVEYS
- ✓ FOR MAP CHECKING
- ✓ FOR DAILY PROGRESS REPORTS
- ✓ FOR LAYING OUT EXCAVATIONS
- ✓ FOR MEASURING CURBS, SIDEWALKS, etc.
- ✓ MEASURING FOR BIDDING



THIS SURVEYING INSTRUMENT measures any distance over smooth or irregular surfaces fast—with precision accuracy to a fraction of an inch. **Records** 100,000 feet automatically and the accumulated total is always in full view. **Calibrations** give inches and fractions on one side of wheel. **Tenths** of a foot are calibrated on the reverse side. Rolatape is ruggedly built to give years of service no matter where the job site may be. See your engineering and surveying instrument dealer or write for complete information today!

ROLATAPE, INC.

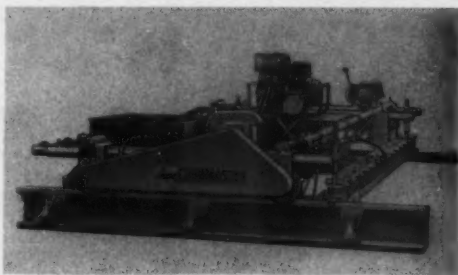
1741 14th Street • Santa Monica 7, California

Rolatape accurate measuring instruments

For more facts, use Request Card at page 18 and circle No. 314

CONTRACTORS AND ENGINEERS

The Iowa Curbmaster Model CMF can pave up to 200 linear feet of slab per hour, the manufacturer reports.



Versatile paving rig also forms curb, gutter

The Iowa Curbmaster Model CMF is an all-electric paving machine powered by twin electric motors, one mounted on each side of the machine,

and individually controlled. Curb concrete is placed by means of variable-speed vibration, and curb design can be changed in a matter of minutes.

Slabs can be poured up to 21 feet wide, and the screeds can be set to any desired crown.

The lightweight machine strikes off slab concrete, puts a trowel finish on it, and builds integral curb to any cross section at the same time—using regular curb and gutter forms.

The machine can be converted to an integral curb builder for use on large paving jobs, or to a curb and gutter machine. It also may be used to widen present slabs with or without curb. A seven-man crew can pave 200 linear feet of slab per hour using ready-mix concrete, the firm says.

For further information write to Iowa Construction Equipment Corp., Dept. C&E, Cedar Falls, Iowa, or use card at page 18. Circle No. 67.

Heated asphalt roller for close-quarter work

A heated asphalt roller with adjustable handle and truck tailboard hook has been announced by Aeroll Products Co., Inc.

The new roller, designed for use as either a finishing roller or one-man paver, is especially recommended by the company for areas where mechanical rollers cannot reach. The unit is said to operate for 9 hours on one 20-pound LPG cylinder. According to the manufacturer, it is effective on hot or cold mix, eliminating tamping and producing a water-resistant heat seal.

The unit features a twin-burner arrangement within the roller. A convenient hook is provided so that the roller may be hung on truck or tailboard for easy transportation.

For further information write to Aeroll Products Co., Inc., Dept. C&E, Wesley St., South Hackensack, N. J., or use the Request Card at page 18. Circle No. 120.

New plastic headgear for welding helmets

A new, free-floating welding-helmet headgear of plastic is offered by The Fibre-Metal Products Co. Called the 3-C headgear, the new unit, according to the manufacturer, is not affected by moisture, is flexible for comfortable conformity to any head, and is adjustable for perfect fit around and on the crown of the user's head.

All metal parts are aluminum for corrosion resistance, light weight, and durability. The new ratchet adjustment is designed for a gloved hand.

For further information write to The Fibre-Metal Products Co., Dept. C&E, Fifth and Tilghman Sts., Chester, Pa., or use the Request Card at page 18. Circle No. 33.

"PRECISE POWER" BY CONTINENTAL MORE POWER TO YOU IN CONSTRUCTION



"More Power to You" is a four-word summary of Continental's stock in trade. And actually, it tells only part of the story, for Continental provides not only MORE but BETTER power—power that is engineered precisely to its job. Continental builds one or more engine models—for use on all standard fuels—for construction jobs of every type and size. The unmatched breadth and diversification of the Continental line assures precise Red Seal power for every construction application. Not only in this field, but on farm and ranch, in industry and transportation—



MODEL F-226 (Gasoline)
INDUSTRIAL CLOSED POWER UNIT
73 H.P. at 2400 R.P.M.

ANY EQUIPMENT
IS BETTER WITH
DEPENDABLE
CONTINENTAL POWER

**Continental Motors
Corporation**
MUSKEGON, MICHIGAN

For more facts, use Request Card at page 18 and circle No. 315



—a leading manufacturer
of pile driving and
extracting equipment

"For many years we have used LUBRIPLATE Lubricants for shop assembly, and have recommended them to our customers through your LUBRIPLATE Tag Plan. Our experience shows that if the proper lubricants are used from the beginning, there are fewer problems and parts replacements later. We consider LUBRIPLATE to be the best possible ounce of prevention."
H. G. Warrington, Vice-Pres.

**REGARDLESS OF THE SIZE AND
TYPE OF YOUR MACHINERY,
LUBRIPLATE GREASE AND
FLUID TYPE LUBRICANTS WILL
IMPROVE ITS OPERATION AND
REDUCE MAINTENANCE COSTS.**

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



For more facts, circle No. 317



INTRODUCING THE NEW
**DRYDEN-EAST
HOTEL**
39th St., East of Lexington Ave.
NEW YORK

Salon-size rooms • Terraces • New appointments, newly decorated • New 21" color TV • FM radio • New controlled air conditioning • New extension phones in bathroom • New private cocktail bar • Choice East Side, midtown area • A new concept of service. Prompt, pleasant, unobtrusive.

Single \$15 to \$22 Suites to \$40
Special rates by the month or lease

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maintenance cuts
down-time **DOWN**
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**INDUSTRIAL
HOUR METERS**

For use with diesel, gasoline
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PLANNED MAINTENANCE based on actual hours of use is the answer to more GO-time and less DOWN-time on your equipment!

TRUE RUNNING TIME gives you a realistic basis for renting and leasing, service contracts, buying and selling.

HOBBS electrical timing instruments are the basic source for the facts you need—revolution counters cannot do the job. Distributors in principal cities... WRITE FOR CATALOG 600.

John W. Hobbs Corporation
—A DIVISION OF STEWART-WARNER CORPORATION
2067 YALE BLVD.
SPRINGFIELD, ILLINOIS



For more facts, use Request Card at page 18 and circle No. 316

Hough's new Model D-500 pusher-dozor is the latest addition to the firm's Paydozer line of rubber-tire tractors.

Announce heavy-duty rubber-tire dozer

The Frank G. Hough Co. has announced an addition to its Paydozer line of rubber-tire pusher-dozers—the Model D-500. The new rig weighs in excess of 100,000 pounds and is powered by a 700-hp turbocharged diesel engine.

According to the manufacturer, the new model features full hydraulic-articulated steering which provides exceptional maneuverability. The turning radius of the unit—25 feet—is less than its over-all length. The D-500 is equipped with 4-wheel, air-

controlled brakes with dual brake pedals for operator convenience.

The new pusher-dozor is equipped with a blade 160 inches wide which extends 10 inches beyond each side of the wheel path. The six-way hydraulic blade control permits lifting and lowering, side-to-side tilt, and forward and backward pitch.

For further information write to The Frank G. Hough Co., Dept. C&E, 762 7th St., Libertyville, Ill., or use the Request Card that is bound in at page 18. Circle No. 68.



...nothing like
a UNIT
for low upkeep"

—H&W CONSTRUCTION CO.
MORTON, WASHINGTON

Specializing in road building, the H&W Construction Co. uses a 5/8-yd. Model 617 shovel to load all its road surfacing material. The UNIT feeds the company's crusher, handling approximately 450 yards of material per day, and, in addition, loads out all trucks. The owners have this to say: "There's nothing like a UNIT for LOW UPKEEP. We've run ours four years with less than \$100 repairs expense, and have run it steady, too."

Low upkeep naturally results from UNIT advanced design. For one thing, UNIT gives you the industry's *only* one-piece main machinery gear case. All gears, shafts, and bearings are completely enclosed in a constant oil bath. Flawlessly sealed at every point, this case keeps lubricants in—dirt and abrasives out!

Advanced design carries over to component parts, too. All spur and bevel gears, worm drives, and rollers are forged for uniform toughness. Shafts are involute splined for greatest strength. Gears, shafts, and many other essential working parts are scientifically heat-treated; wear surfaces are flame-hardened for longer life.

Why not take time out to talk to the owner and operator of a UNIT in your area. See how often LOW UPKEEP and HIGH PRODUCTION pop up during the course of your conversation. Then, get in touch with your local UNIT distributor... let him give you all the facts!



UNIT
UNIT CRANE & SHOVEL CORP.
6309 W. Burnham Street
Milwaukee 19, Wisconsin

SHOVELS: 1/2 Yd. to 1 Yd. • CRANES: 5 1/2 Ton to 21 Ton • DRAGLINES: 1/2 Yd. to 1 Yd. • TRENCHERS: 1/2 Yd. to 1 Yd. • TRUCK CRANES: 10 Ton to 40 Ton

For more facts, use Request Card at page 18 and circle No. 318

Offer range of open-web expanded steel members

A wide range of new structural shapes is said to be available as the result of development of expanded open-web steel sections by the Shlagro Steel Products Corp.

The new sections include beams, girders, columns, channels, zees, and Hi-Load joists. Four different series of beams or girders are available, with square, hexagonal, octagonal, or trapezoidal openings in the web. The new Shlagro sections are reported to be lighter than solid sections of the same carrying capacity.

The openings in the web provide ready-made channels for utilities in building construction, the manufacturer points out. Also, several of the new beams and girders provide added stiffness for long-span construction.

For further information write to Shlagro Steel Products Corp., Dept. C&E, 84 Washington Ave., Somerville 43, Mass., or use the Request Card at page 18. Circle No. 54.

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CONSTRUCTION**

CAISSONS

**DRILLED AND
UNDERREAMED
PIERS**

**SPECIAL
DRILLING
PROBLEMS**

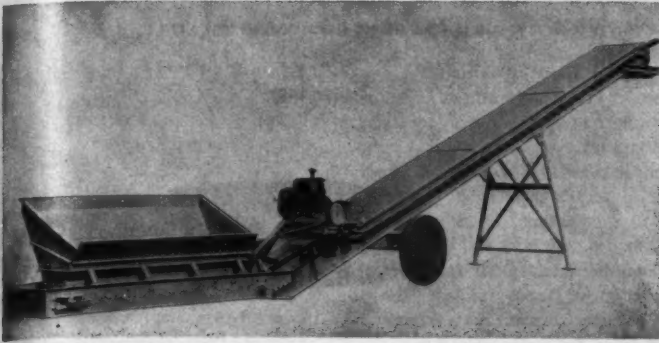
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Wire or phone for a quotation
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ANYWHERE IN THE WORLD

**McKINNEY
DRILLING COMPANY**
MACOGDOCHES, TEXAS

Ph: LOgan 4-8373 • P. O. Box 190

For more facts, circle No. 319
CONTRACTORS AND ENGINEERS



Dry-batch conveyor feeds transit mixer

The Ko-Cal Trans-A-Batch, a new portable machine that receives dry-batch material from trucks and conveys it to transit mixers at the job site, is announced by Koehring Co. of California.

The Trans-A-Batch consists of a 1½-yard hopper for receiving the dry batches, a positive-drive feed belt under the hopper, an inclined transfer belt, a water meter and piping assembly, and an air-cooled gasoline engine with electric starter and clutch. The drive belt, located under the receiving hopper, conveys dry batches to the inclined transfer belt, which in turn transmits material up into the transit-mix trucks.

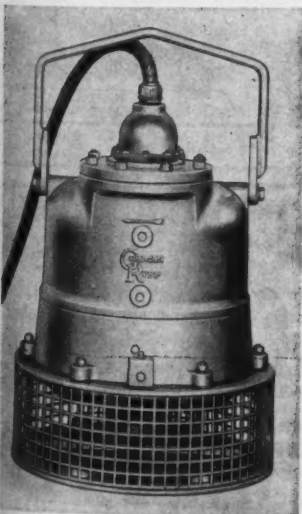
For further information write to Koehring California Co., Dept. C&E, 2200 Country Club Blvd., Stockton 4, Calif., or use the Request Card at page 18. Circle No. 14.

Announce new 8-inch submersible pump

The Gorman-Rupp Co. announces an 8-inch aluminum submersible dewatering pump, the Model S8A1, with capacity from 1,000 gpm at 148-foot head to 2,700 gpm at 40-foot head.

Height of the new unit is 31 inches; diameter, 28 inches; weight, 775 pounds. The strainer area is 480 square inches with 1-inch-square openings. The pump is available with a 65-hp motor operating at 1,750 rpm.

For further information write to The Gorman-Rupp Co., Dept. C&E, 305 Bowman St., Mansfield, Ohio, or use card at page 18. Circle No. 10.



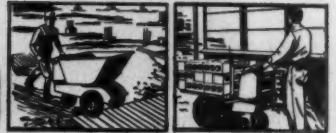
For more facts, use Request Card at page 18 and circle No. 321



PRIME-MOVER

POWER TO PRODUCE

Thousands of M-15B Prime-Movers are in use tripling construction laborers' production. Places 12 to 17 cu. yds. of concrete per hour without extensive preparation. Runs on the same type ramps, holds and runways as hand carts. 10 cu. ft. bucket and flatbed, interchangeable. Write for proof of production performance. Prime-Mover Co., Muscatine, Iowa.



For more facts, use Request Card at page 18 and circle No. 320

Want better scraper versatility?



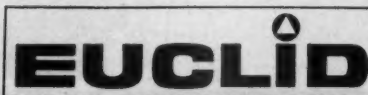
the TS-14 all-wheel drive "Euc" is the answer!

Whatever your scraper requirements may be, the Euclid TS-14 can cut earthmoving costs on a wide range of work—from small yardage jobs to the biggest projects.

All-wheel drive and 14 yd. struck capacity puts this "Euc" way ahead of other medium size scrapers in performance and overall work-ability. With a total of 296 h.p. and separate Torqmatic Drive for each axle, the TS-14 picks up heaped loads in a hurry... gets out of the borrow pit or cut fast... and really rolls on the haul road. It loads itself in practically any material... and with a push tractor it's a big producer on the toughest scraper job.

Here's a one-man earthmover that reduces your equipment investment... works more days per year... handles a wider range of work because it isn't stalled by steep grades or adverse conditions. Ask your dealer for complete information... better yet, have him show you a TS-14 in operation.

EUCLID Division of General Motors, Cleveland 17, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



FOR MOVING EARTH, ROCK, COAL AND ORE



Bucyrus-Erie's new, improved 15-B Series Two crane-excavator has a bucket capacity of $\frac{3}{4}$ yard.

He can't DO what you want ... if he can't HEAR what you SAY!

No need to scream your head off uselessly! With Audio Hailer you can project spoken commands ... like a harpoon ... over a half-mile range ... in any direction!

Yet you are not "tied down" to any external power source. New "TP" (transistor-powered) Hailer is a compact, 5 $\frac{1}{2}$ lb., "one-piece" unit, self-powered on standard flashlight cells.



Save your voice ... your time ... your temper! Mail coupon for full description and price list.

AUDIO EQUIPMENT CO., INC.
P.O. Box 192, Port Washington 40, N. Y.

Rush Audio "TP" Hailer catalog and prices

Name _____ Title _____
Company _____
St. & No. _____
City or Town _____
Zone _____
(if any) State _____

For more facts, use coupon or circle No. 322

Offer improved model of crane-excavator

A Model 15-B Series Two crane-excavator, with improvements designed to increase production and reduce operating costs, has been announced by Bucyrus-Erie Co. The rig is available as a crawler or carrier-mounted unit, fully convertible for crane, dragline, clamshell, hoe, or shovel service.

As a hoe or shovel, the new machine may be equipped with a $\frac{3}{4}$ -cubic-yard dipper.

Among major improvements announced for the 15-B Series Two crawler are increased horsepower, wide and longer crawlers, and higher-capacity brakes. The carrier-mounted rig has an 18-ton crane capacity.

For further information write to Bucyrus-Erie Co., Sales Promotion Division, Dept. C&E, South Milwaukee, Wis., or use the Request Card that is bound in at page 18. Circle No. 124.

Offer new twin-kettle unit for roofing jobs

Aeroli Products Co. has announced the availability of twin kettles custom-built to roofers' requirements.

The unit consists of two separate kettles on one chassis—either two kettles of the same size or two different-size kettles.

For further information write to Aeroli Products Co., Inc., Dept. C&E, 60 Wesley St., South Hackensack, N. J., or use the Request Card at page 18. Circle No. 23.

New two-way mobile radio has compact control unit

General Electric has added a new trunk-mount 2-way radio to its transistorized Progress line of vehicular communications equipment. A new control head has been designed for use on a car's dashboard.

The control unit is 2 $\frac{1}{4}$ inches deep, 2 $\frac{3}{4}$ inches high, and 4 $\frac{1}{2}$ inches wide—small enough to fit in the palm of the hand. A standby switch permits the driver to turn the car's engine off and leave the radio operative.

The equipment is available in high-band and low-band frequencies, 25 to



54 mc, and 130 to 174 mc.

For further information write to General Electric Communication Products Dept., Section P, Dept. C&E, Lynchburg, Va., or use the Request Card at page 18. Circle No. 53.

Winslow

TRUCK SCALES

PIT AND PITLESS TYPES

Capacities: 15, 18, 20, 30, 40, 50, 60 and 70 tons.

For use at temporary and permanent locations, stockpiles, and by bituminous material contractors at the jobsite.

Write or phone
Dept. B-70 today
Phone NORTH 1231

WINSLOW GOVERNMENT STANDARD SCALE WORKS, INC.
25TH & HAYTHORNE
TERRE HAUTE, IND.

For more facts, use Request Card at page 18 and circle No. 323



TYPE CS — PITLESS — PORTABLE



HERE WE GO!
WAGON TRAIN
MORE TONS PER TRIP
A CONVENIENT WAY TO
UNLOAD — SIDE DELIVERY —
KEEP GOING. LEAVE
ROAD CLEAR FOR NEXT
WAGON TRAIN

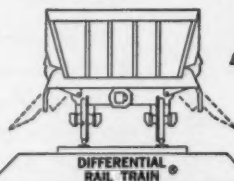
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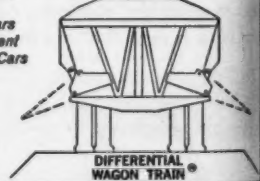
BUILDERS OF SIDE DUMP
VEHICLES SINCE 1915
Railway Air Dump Cars
Mine Haulage Equipment
Locomotives and Mine Cars



DIFFERENTIAL RAIL TRAIN



PATENTED



DIFFERENTIAL WAGON TRAIN

For more facts, use Request Card at page 18 and circle No. 324

THREE BIG BENEFITS FROM IDEAL REEL

IDEAL REEL INCREASES PROFITS • By allowing user to make more ties per man hour ... by eliminating virtually all wire waste common in other tying methods.

IDEAL REEL INCREASES EFFICIENCY • By simplifying tying operations (even unskilled users quickly reach peak output) ... by dispensing wire evenly, smoothly in desired lengths.

IDEAL REEL INCREASES SAFETY • By freeing hands for climbing ... by eliminating loose wire ends, snagging, tripping, and other causes of accidents.

See your dealer, or write ...

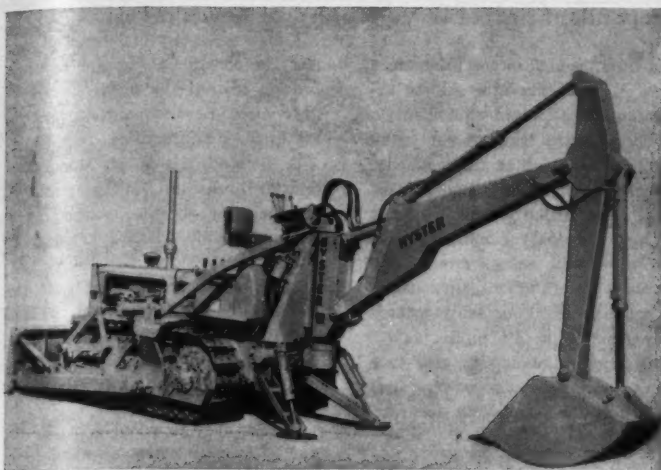
IDEAL REEL COMPANY
1424 Madison Street • Paducah, Kentucky

Ideal Reel Wire Coils are available in most types and gauges of wire, packed in handy cartons of 20 3 $\frac{1}{4}$ to 4 lb. coils. They load quickly, easily without tools. Right or left hand use.



For more facts, use Request Card at page 18 and circle No. 325

CONTRACTORS AND ENGINEERS



This new Hyster hydraulic backhoe digs to a depth of 12½ feet. A choice of three buckets is available.

Dual hydraulic system for new backhoe

A new hydraulic backhoe introduced by Hyster Co. is designed for mounting on Caterpillar D4 tractors and Cat HT-4 and 955 Traxcavators. The attachment has an 8,000-pound breakout force.

The hoe front can swing at its full rated speed of 5½ rpm through a 210-degree arc at the same time the bucket is being raised or lowered. This is accomplished by using two separate hydraulic pumps.

The new backhoe digs to a depth of 12 feet 6 inches. A choice of three buckets is available—in widths of 16 (5.3 cubic feet), 22 (7.8 cubic feet), and 30 (13.5 cubic feet) inches.

For further information write to Hyster Co., Tractor Equipment Division, Dept. C&E, P. O. Box 328, Peoria, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 29.



New All-Weather Cab for Models 922, 944, and 966 CATERPILLAR TRAXCAVATORS

- Made of heavy gauge sheet steel and angle iron frame.
- Full vision SAFETY GLASS windows, mounted in rubber—rear window slides open for ventilation.
- Full size hinged doors on both sides, easily removed for summer operation.
- Windshield wiper, heater-defroster, sun visor and rear view mirror (optional).

See your Caterpillar distributor or write: **CAMPBELL DETACHABLE CAB CO.** WAUCONDA, ILLINOIS

For more facts, circle No. 326



Prime-Mover Concrete Vibrator

Designed on the proven rolling-weight principle that:

1. Produces high frequency powerful vibrations
2. Permits the shaft to run cool and slow
3. Provides one hand portability
4. Changes from small to large heads quickly
5. Requires fewer parts—less maintenance
6. Gasoline or electric power units

Guaranteed by Prime-Mover Co.—recognized for dependability in concrete handling equipment. Write to us for distributor's name and a demonstration. Prime-Mover Co., Muscatine, Iowa.

PRIME-MOVER

For more facts, use Request Card at page 18 and circle No. 327

Whatever Type You're Looking For... **FRUEHAUF BUILDS IT!**



Complete Platform Line, with units ranging from brawny 50,000-pound capacity workhorse units to lighter-weight multi-purpose and telescoping units. Lengths from 21½ feet for single axle units to 42 feet for tandems.

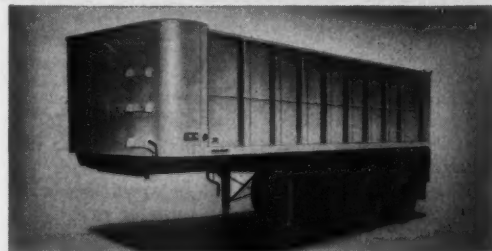
The Industry's Only Complete Line of Rugged Construction Hauling Equipment

In addition to a full line of platforms, carryalls and dumps, Fruehauf offers a wide selection of bulk cement tanks, high temperature insulated tanks, pole trailers, and dump trailer chassis. Fruehauf has the industry's *only* truly nation-wide service facilities for your convenience. Long and short term leasing, too, plus a variety of financing plans to make your purchase of Fruehauf equipment easier.

Why not start today to boost your construction profit dollar. Stop in at your nearest Fruehauf Branch and discuss Fruehauf's complete Trailer package with your Fruehauf salesman.



Complete Carryall Line for over and off-road transport. From 15 to 100-ton rated capacity. Level or drop deck models. Flooring of #1 grade hardwood. Removable goose-neck carryall models cut unloading time to less than 15 minutes!



Complete Dump Trailer Line, from aggregate hopper dumps with up to 30 cubic yard payloads to hoist-type dumps with payloads up to 73 cubic yards! Fruehauf dumps give you greater payloads, faster dumping, lower maintenance costs.

"ENGINEERED TRANSPORTATION"—The Key to Transportation Savings

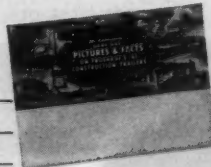


FRUEHAUF TRAILER COMPANY

10949 Harper Avenue • Detroit 32, Michigan

Please send me Fruehauf's complete line folder for 1961.

Name _____ (Please print)
Company _____
Address _____
City _____ State _____



For more facts, use Request Card at page 18 and circle No. 328



Harnischfeger's new 3/4-yard excavator features independent propel drive as standard equipment.

Independent propel drive feature of new shovel

Harnischfeger Corp. has announced a new 3/4-yard excavator said to incorporate, as standard equipment, a number of extra features not found on other machines of this capacity.

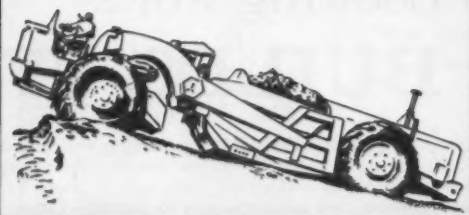
Chief among these is independent propel drive, which is said to permit the machine to "move up" simultaneously with swing, dump, and other machine functions, thus speeding work cycles. Four travel speeds range from 1/2 to 3 1/4 mph.

Independent, planetary, gear-type boom hoist reportedly power-raises and lowers the boom with accurate,

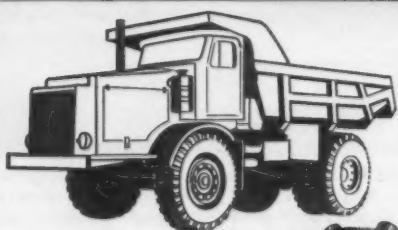
positive control. Hydraulic controls provide instant-response, direct-acting control of every operation, according to the manufacturer.

Designated the P&H Model 315 crawler excavator, the machine is designed for versatile service as a crane, dragline, clamshell, backhoe, or shovel.

For further information write to Harnischfeger Corp., Dept. C&E, 4445 W. National Ave., Milwaukee 46, Wis., or use the Request Card that is bound in at page 18 of this issue, Circle No. 9.



how **NoSPIN**
DIFFERENTIALS IMPROVE
HEAVY CONSTRUCTION
EQUIPMENT OPERATION



NoSPINS are the only differentials manufactured that direct all available power to drive wheels having traction—giving full-time equipment control. NoSPINS automatically permit differences in wheel speeds when required for making turns or negotiating obstructions in a forward or rearward direction.

NoSPINS ARE EASY TO INSTALL—no special tools needed. NoSPINS ARE ECONOMICAL—you can obtain them from your dealer or specify them on your original equipment.

WRITE TODAY FOR
COMPLETE DESCRIPTIVE LITERATURE
862 A

**DETROIT AUTOMOTIVE
PRODUCTS CORPORATION**

Manufacturers of THORNTON Four Rear Wheel DRIVES,
NoSPIN Differentials and Super LOAD-BOOSTER third axles

8705 GRINNELL AVENUE DETROIT, 13, MICHIGAN, U.S.A.

For more facts, use Request Card at page 18 and circle No. 329

Quartet of direct-drive, gear-drive chain saws

Four new chain saws, the 909D and 707D direct-drive models and the 909G and 707G gear-driven models, have been introduced by Homelite.

Among listed features of these tools are: new, extra-husky crankshafts said to stand up under the toughest production cutting; pleated, vertical filters that shed dirt and sawdust



The new Homelite 909D chain saw.

down and out to reduce clogging; and a new on-off switch grouped with other controls near the throttle for fast, easy operation.

The 26-pound Model 909G and the 24-pound 707G have a choice of gear ratios—2.8 or 3.5 : 1. The 909D weighs only 23 pounds and has a direct-drive chain speed of 3,000 fpm; the 707D weighs 19 pounds.

For further information write to Homelite, division of Textron, Inc., Dept. C&E, 71 Riverdale Ave., Port Chester, N. Y., or use the Request Card at page 18. Circle No. 38.

Claim unique features for vibratory screen

A new horizontal vibratory screen said to incorporate a number of unique features has been introduced by the Comco Corp.

These features include true balanced-mass design, in which the screening decks are balanced one against the other, thus eliminating all dead-weight counter-balances. Another feature is "point-of-no-oscillation" suspension. The screen decks are supported on the base exactly in their center of oscillation, and therefore transmit no vibration of any kind to the base frame, according to the manufacturer.

For further information write to Comco Corp., Dept. C&E, 5421 Lancaster Ave., Philadelphia 31, Pa., or use the Request Card at page 18. Circle No. 59.



AGRICAT

the world's most versatile
miniature Earth Mover,
Loader, Trench Digger



Agricat becomes Loader in less than 10 minutes by replacing blade with bucket.



Hydraulic back-hoe attachment converts Agricat into Agrihoe for trench digging.

PROFITABLE DEALERSHIPS AVAILABLE

Write or wire for further information

J. & O. Industries

730 Bancroft Way, Berkeley 10, Calif. • Thornwall 1-0296

For more facts, use Request Card at page 18 and circle No. 330

DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process... successfully used for more than a Quarter Century.

GUARANTEED TO YOUR SATISFACTION



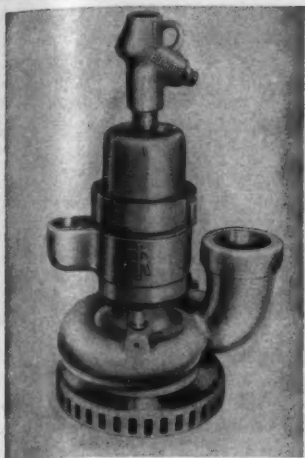
Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

SWICK-GUTH CO.
MURKIN KANSAS FORMERLY GUTH CO.

SPECIALISTS IN WELDING DIESEL CASTINGS

For more facts, use Request Card at page 18 and circle No. 331

CONTRACTORS AND ENGINEERS



New pump features low air consumption

A new Ingersoll-Rand air-operated sump pump is said to be easily carried by one man and can be operated on a moderately low volume of air such as supplied by a small portable compressor. The Size 225 sump pump handles clear or dirty water, oil, sewage, or light sludge.

The pump is only 16 1/4 inches high including air strainer, and will pass through an opening 7 1/2 x 9 3/8 inches. It has a rated water delivery at 90 psi from 197 gpm at 10-foot head to 68 gpm with an 80-foot head.

For further information write to Ingersoll-Rand Co., Dept. C&E, 11 Broadway, New York 4, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 61.

Twin-rotor crusher for wet materials

The new Twin-Rotor Impactor offered by the Pennsylvania Crusher Division of Bath Iron Works Corp. has been designed to eliminate the problems of plugging and caking



normally associated with fine reduction of wet and sticky materials, according to the manufacturer.

There are no cage bars or grates to plug on the new crusher. The wear liners are offset from the frame so that gas torches can be played into the spaces between the liners and the frame, the company reports.

This new crusher is offered in two sizes for rated capacities to 100 tph when used as a secondary crusher in closed circuit to produce 100 per cent minus-8-mesh product.

For further information write to Bath Iron Works Corp., Pennsylvania Crusher Division, Dept. C&E, 323 S. Matlock St., West Chester, Pa., or use the Request Card that is bound in at page 18 of this issue. Circle No. 125.

A speedup in pouring operations of some 57 per cent over the original estimate is being achieved by Munn & Perkins, Modesto, Calif., contractor, on a Modesto concrete pipeline project with this Batch-A-Bout portable dry-batch concrete plant, working with job-site pavers. The contractor is pouring 1,100 to 1,200 linear feet of 36 to 48-inch-diameter pipe per day. Dry-batch materials are hauled to the job sites, where highway-type pavers produce 75 cubic yards per hour of mix for the poured-in-place pipe. The plant has a scoop-loaded, 40-ton aggregate bin and a 1,600-cubic-foot cement storage silo. For further information write to Noble Co., Dept. C&E, 1860 7th St., Oakland, Calif., or use the Request Card at page 18. Circle No. 123.



LOW COST...EASY OPERATION



Rivinius

LIVE POWER STEERING

for CAT D8 Tractors
(prior to 14A models)

SAVES MAN-POWER: Operator fatigue goes down... performance goes up! Finger tip control Live Power Steering provides closer, faster control of D8 power and maneuverability.

SAVES CLUTCHES: No wasteful slippage and clutch wear...on each turn the clutches are engaged smoothly into complete seizure.

SAVES TIME: Levers move only 1 1/2" and return automatically when released. Operators report they can operate a D8 one, sometimes two speeds faster with Rivinius Live Power Steering.

SAVES DOLLARS: This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, valve, pump, reservoir, brackets and hardware.

See your Caterpillar dealer now...or write:
Rivinius, Inc.

EUREKA, ILLINOIS

For Caterpillar Motor Graders: Torque Steering Booster
Hydraulic Moldboard Shift...Snow Blower...Snow Loader
For Caterpillar D8 Tractors: Live Power Steering

For more facts, use Request Card at page 18 and circle No. 332



MODEL H10 (ABOVE)

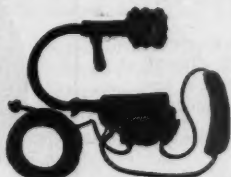
Gasoline-powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power takeoff for attaching "BERG" flexible shaft surfacing equipment.

WIRE OR WRITE
FOR DETAILS...

"BERG" CONCRETE SURFACERS

For Surfacing:

Bridges, Highways,
Airport Runways, Dams,
Culvert, Floors, Walls.



MODEL A (ABOVE)

Lightweight, electric-powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces.

CONCRETE SURFACING MACHINERY CO.
4665 SPRING GROVE AVE. CINCINNATI 32, OHIO

For more facts, use Request Card at page 18 and circle No. 333

HEAVY DUTY D. C. SOLENOIDS

MODEL SL

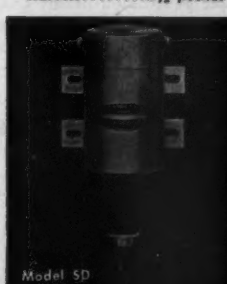
VOLTAGES(D.C. Only)
6V. 12V. 24V. 32V.
CURRENT DRAW....(Pulling)
55A. 35A. 15A. 12A.
CURRENT DRAW....(Holding)
1.6A. .8A. .4A. .3A.
DUTYContinuous
CYCLES..... Not to exceed
6 per minute
PULL...Approximately 10 lbs.
over 1/2 inch stroke
WEIGHT.....2 1/2 pounds



Model SL

MODEL SD

VOLTAGES(D.C. Only)
12V. 24V. 32V. 115V.
CURRENT DRAW....(Pulling)
40A. 20A. 15A. 4A.
CURRENT DRAW....(Holding)
.5A. .25A. .20A. .05A.
DUTYContinuous
CYCLES..... Not to exceed
6 per minute
PULL...Approximately 10 lbs.
over 1 1/2 inch stroke
WEIGHT.....4 1/4 pounds
Model SM available with 1 inch stroke.

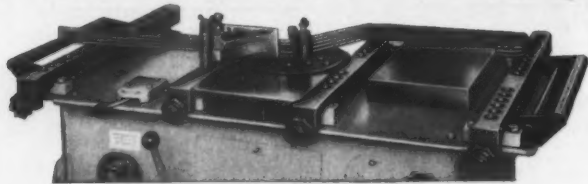


Model SD

SYNCHRO-START PRODUCTS, INC.
8151 N. RIDGEWAY AVENUE • SKOKIE, ILL.

For more facts, use Request Card at page 18 and circle No. 334

THE "PERFECT" AUTOMATIC RE-BAR BENDER



**INCREASE PRODUCTION
BY DOUBLE BENDING**

**Available in four sizes with
capacities up to #18s (2 1/4")**

FEATURING VARIABLE SPEED DRIVE, AUTOMATIC STOP AND RETURN CONTROL,
COMPLETELY ENCLOSED DRIVE, RADIUS
AND SPIRAL BENDING ATTACHMENTS.



ALSO THE NEW HIGH-SPEED "BIFAX" CAPACITY
UP TO #8 (1"). IDEAL FOR HOOK, RADIUS AND
STIRRUP BENDING.

Write for Literature

ALBERT KLINGELHOFER MACHINE TOOL CORP.
167 Mill Lane Mountainside, N.J.

For more facts, use Request Card at page 18 and circle No. 335



**Spoiling
for profit
anywhere,
everywhere...**

PARSONS® 77 TRENCHLINER®

Turning a profit on miles of small-sized trench is easy digging for the Parsons 77. It has all the features you expect to find only on much larger machines, yet is not much wider than a yardstick. It has everything you need to tangle with toughest terrain and to bring home ditch fast and clean.

The Parsons 77 cuts from 6" to 18" wide, digs to 5' depths at speeds to 21 lineal feet per minute. It gives you a choice of 32 hi-lo digging selections for most profitable penetration in any ground. And it is low on maintenance... gives you years of dependable service and miles of ditch at very low cost. Ask your distributor for details.

**PARSONS
COMPANY**
Newton, Iowa

K A Division of
KOEHRING
Company

P100-CE

Please send me the Parsons 77 booklet.

Name _____

Company _____

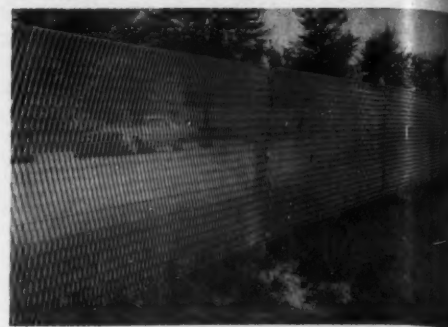
Address _____

City _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 336

Product Parade—These Products Can Help Widen Your Profit Margin

The new Alcoa anti-glare screen, an expanded aluminum mesh headlight barrier system, reduces blinding headlight glare on divided highways.



Median-strip screen cuts headlight glare

A new product said to virtually eliminate the hazard of blinding headlight glare on divided highways is announced by the Aluminum Co. of America. The Alcoa anti-glare screen is a headlight barrier system for installation on the median strip of heavily traveled main roads.

The barrier consists of a 4-foot-high fence of aluminum expanded metal mesh, which is reported to block out effectively light from oncoming vehicles.

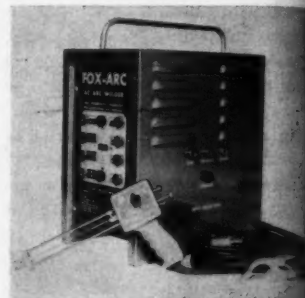
Said to be ideal for reducing nighttime danger on curves, or on straightaway stretches with narrow median strips, the new screen needs no painting and is virtually maintenance free. It has a life expectancy exceeding 40 years, and is easily erected and transported, the company reports.

For further information write to Aluminum Co. of America, Dept. C&E, 1501 Alcoa Bldg., Pittsburgh 19, Pa., or use the Request Card at page 18. Circle No. 37.

Introduce new line of welding equipment

A complete line of portable electric welders, welding equipment, and accessories has been announced by Fox Products Co.

Six Fox-Arc welder models with ranges from 30 to 200 amp are available. The model F spot-weld gun for repair work weighs less than 2 pounds and is said to eliminate any backup electrode. Other items include the Model F-10 power supply for use with the Model F gun; an electric carbon-arc flame torch for jobs that normally require a gas-flame torch; Model F-17 electrodes for spot-welding stainless steel; and a complete line of welding accessories.



For further information write to Fox Products Co., Dept. C&E, 4720 N. 18th St., Philadelphia 41, Pa., or use the card at page 18. Circle No. 46.

it's a
**TURN
FOR THE
BETTER**

**NOW...POWER STEERING
FOR YOUR CATERPILLAR
12 AND 112 GRADERS**

A Complete System Engineered for Easy, Fast Installation. Heavy-duty, full-time power steering puts operator in complete control of grader at all times... boosts work output. Simplified design... only 4 moving parts... assures quick, easy installation and maintenance-free performance.

Get Full Facts from your CATERPILLAR Distributor or write:
R. H. SHEPPARD CO., INC. • HANOVER, PA.



Sheppard Power Steering is original equipment on many models of Brockway and Mack Trucks, Koehring Dumpsters, Allis-Chalmers Graders, Huber-Warco Maintainers, Champion Graders by Dominion Machinery, Fire Engines by American La France, Schield-Bantam Cranes and many others.

For more facts, use Request Card at page 18 and circle No. 337

CONTRACTORS AND ENGINEERS

Product P

**New sling
helicopte**

A new sling
by crane or
by the Gene
Aeroquip Co.
This univ
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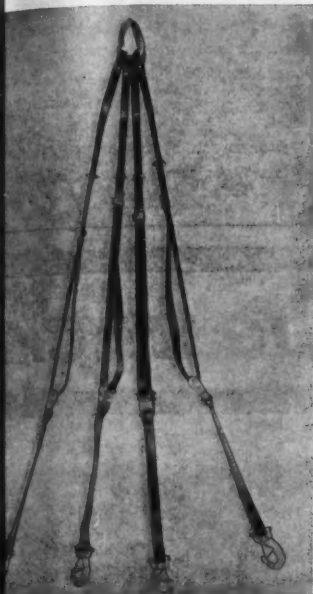
**Versatile
for crawle**

A new nut
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With the tool
holds a nut
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page 18. Circ
AUGUST, 196

New sling for crane, helicopter lifting jobs

A new sling for lifting heavy objects by crane or helicopter is announced by the General Logistics Division of Aeroquip Corp.

This universal sling is made of heavy-duty nylon webbing for strength and light weight. Each of the four legs will support 10,000 pounds,



and the nylon lift ring will support 40,000 pounds, giving the sling a working capacity of 5 tons.

The central feature of the sling is said to be the adjustability of each leg. It is possible to adjust each leg length individually in seconds, merely by operating the buckle spool takeup.

Also built into each leg are delta rings so that the leg may be wrapped around an object and hooked to itself, rather than to the object. This allows use of the sling as a choker or cradle sling.

The whole assembly weighs less than 30 pounds.

For further information write to the General Logistics Division, Aeroquip Corp., Dept. C&E, 2929 Floyd St., Burbank, Calif., or use the Request Card at page 18. Circle No. 121.

Versatile nut gripper for crawler-track work

A new nut gripper, designed especially for crawler-track work, is available from Rodgers Hydraulic, Inc. With the tool's self-locking grip that holds a nut with 7,000 pounds of clamping force, easy one-man removal of the most stubborn track bolts is said to be possible.

Adjustable jaws accommodate any size of nut from 1/2 inch to 2 inches across the face. In addition to track maintenance, the tool can be used on any equipment where tight, rusted, or "frozen" bolt connections pose a problem, the company reports.

For further information write to Rodgers Hydraulic, Inc., Dept. C&E, 4401 Walker St., Minneapolis 26, Minn., or use the Request Card at page 18. Circle No. 42.

Introduce convertible concrete-drill unit

The Clipper Mfg. Co. has introduced a new convertible Power-Pack portable drill unit designed to permit fast, economical drilling of holes from 2 to 6 1/4 inches in diameter.

The basic unit consists of the Power Pack, a 2-hp continuous-duty motor mounted on a portable tubular-steel cradle. A portable hand piece that connects directly to the flexible shaft can be added. Holes up to 2 inches in diameter can then be drilled

with this Model DH-20.

A drill stand may also be added to the basic unit. By inserting the flexible shaft into the gear box of the drill stand, the operator reportedly can drill holes up to 6 1/4 inches in diameter with this Model D-20.

For further information write to Clipper Mfg. Co., Dept. C&E, Suite 142, 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 122.

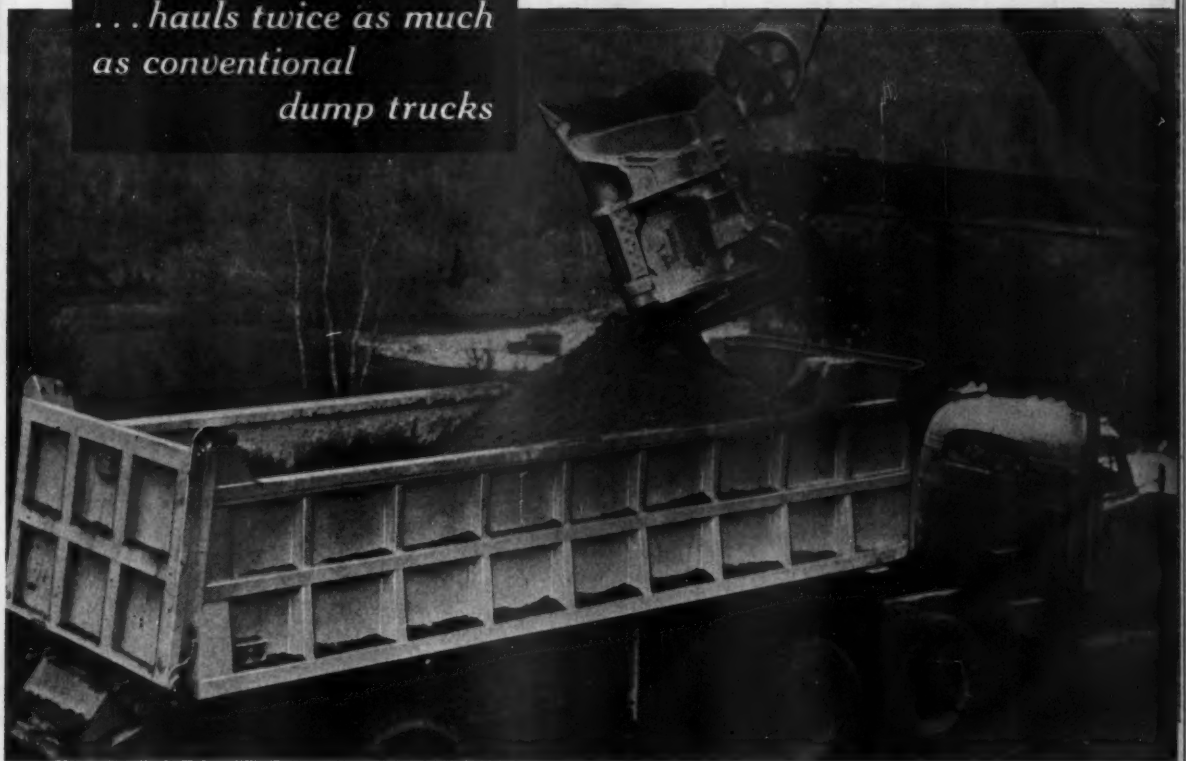


Clipper's new D-20 drill produces holes up to 6 1/4 inches in diameter.

IN ROUGH TERRAIN—

HEIL-TEC Dump Trailer

*... hauls twice as much
as conventional
dump trucks*



In extremely rough terrain, this specially designed 20-yd, 18-wheel Hy-SPILL frameless dump trailer hauled approximately twice the payloads that comparative 10-wheel dump trucks carried at about the same speed.

This outstanding performance was achieved for Landers & Griffin, Inc., Portsmouth, N. H., on their job in the heart of the White Mountains near Littleton, N. H.

"It is only because of the remarkable stability of the Hy-SPILL design, along with the flotation of 18 tires and the traction of two axles, that such performance is possible," said a spokesman for Landers & Griffin. "If this was attempted with a conventional frame trailer, repeated tip-overs would be the result."

TEC offers unsurpassed know-how in dump trailer design. Every TEC unit is engineered for the kind of applications you specify and for the area where it will operate. Choice of single-axle and tandem semi-trailers for use with either single-axle or tandem tractors. Single-

axle trailers are available in body lengths from 16 to 28 ft, and tandem-axle units in lengths from 20 to 34 ft.

HY-TEC FRAMELESS TYPE
U.S. Patent No. 2,845,267



HY-SPILL FRAMELESS TYPE
(Available Only From Heil)
U.S. Patent No. 2,853,341



Other on-the-job advantages of TEC design

- Exclusive Hy-SPILL design holds front tandem wheels on ground while dumping . . . provides 38- to 40-in. spill height from end of body floor to ground for dumping into high hoppers, paving and spreading machines.
- Body can be raised or lowered while moving, with better stability than any other hauling unit.
- Trailer can be dumped while jackknifed, speeds dumping and turn-around in tight places.
- Exclusive design of TEC frameless dump trailers cuts dead weight . . . lets you haul up to 4,000 lb more payload — even more where longer axle spacing is desirable or when aluminum bodies are used.

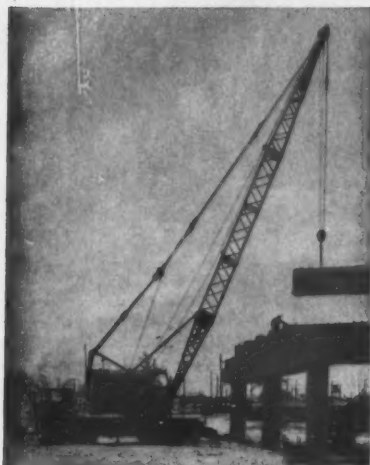
TEC
Division

THE HEIL CO.

DUMP BODIES and HOISTS

TEC Division, 1285 West 70th Street, Cleveland 2, Ohio

For more facts, use Request Card at page 18 and circle No. 338



Northwest's new 45-ton truck crane.

Introduce new 45-ton truck-mounted crane

Northwest Engineering Co. announces a new 45-ton truck crane featuring smooth, easy-operating, uniform-pressure swing clutches; a rugged hook roller assembly mounted on an equalizer trunnion; easily removable counterweight, both internal and external; low overhead clearance; and alloy booms, either flange or pin-connected.

Other features reported by Northwest include "feather-touch" clutch control for power operation of main drum clutches; high-speed, planetary, independent boom hoist, power-controlled in both directions; cast alloy-steel rotating base for ultimate strength and permanent alignment; and a helical gear drive, fully enclosed and immersed in oil.

For further information write to Northwest Engineering Co., Dept., C&E, 135 S. LaSalle St., Chicago, Ill., or use the Request Card that is bound at page 18 of this issue. Circle No. 6.

New rotary hammer for masonry drilling

A new version of the Model 726 Roto-Hammer, said to be ideal for economical, fast drilling of masonry holes, is offered by Skil Corp.

The new 726 reportedly can combine hammering action with auto-



matic power rotation, can hammer without rotary action, or can drill without hammering action. It delivers 2,400 blows per minute and makes 500 revolutions per minute. It weighs 13½ pounds. The 726 drills holes from 11/64 inch to 1½ inches in diameter.

For further information write to Skil Corp., Dept. C&E, 5033 Elston Ave., Chicago 30, Ill., or use the Request Card that is bound at page 18. Circle No. 34.

Introduce 4-cylinder, single-stage compressor

A new 4-cylinder, single-stage air compressor has been introduced by Emglo Products Corp. Said to be capable of running a hand-held rock drill or 80-pound paving breaker, or of supplying the air needed for a ¼-inch sandblast nozzle, the Airmaster 75 unit will deliver 75 cfm of air at 100 psi.

Power for the new unit is supplied by V-belt or direct connection with any suitable electric motor, gas engine, or power-takeoff source.

Models that include base mounting and a portable trailer mount are available.



For further information write to Emglo Products Corp., Dept. C&E, 116 DuPont St., Johnstown, Pa., or use the Request Card at page 18. Circle No. 25.

Barricade warning light is tamperproof unit

Star Headlight & Lantern Co. offers a multipurpose barricade warning light in seven models.

One important feature of this unit, according to the company, is that the switch is inside the case, making the light tamperproof. The case, 5½ inches wide, 2½ inches deep, and 5 inches high, is of heavy, drawn steel, electro-zinc-coated and painted. Operating temperature range is minus 20 degrees F to 135 degrees F. The flashing unit is a transistorized circuit.

Batteries can be one or two 6-volt lantern type; service life is said to

SAVE 1.The truckTh



You can't find a better team for savings than this INTERNATIONAL model VF-190, with rugged V-8 power and Select-O-Matic transmission.

Put INTERNATIONAL Trucks with ELE

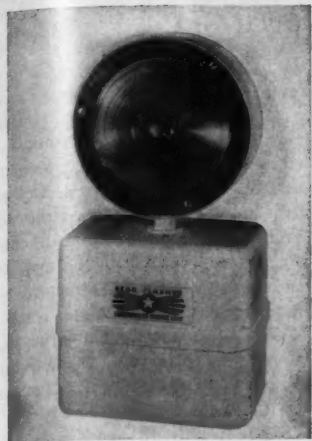
Save on truck wear and maintenance: Why is a Select-O-Matic transmission best? A coordinated combination of a five-speed synchromesh transmission with solenoid-controlled hydraulic clutch and high-efficiency torque converter, it can make definite savings in clutch, axle and engine operation. The dry clutch problem is eliminated, because hydraulically-operated clutch is always either *positively engaged* or *disengaged* by the solenoid, preventing drag. Most important of all, the torque converter cushions shock-loads and minimizes danger of tearing out the rear-end or axle.

Save on drivers: More positive control of INTERNATIONAL Select-O-Matic 5-speed synchromesh transmission cuts down on drivers "lost-time" reports. High-efficiency torque converter and solenoid-operated hydraulic clutch means controlled up-shifting or down-shifting, less wheel

spinning. "Soft" starts become positive starts. Driving becomes less wearing, less "cowboy" and more nearly automatic. New drivers can be trained quickly and easily.

Save the schedule: Higher road speeds can be maintained with INTERNATIONAL Select-O-Matic transmission. On grades, instead of the engine slowing down, the converter takes over to supply additional torque. Little speed is lost when shifting. Your drivers are given the pick of the power and the gear selection to better meet deadlines.

Everybody saves with proven INTERNATIONAL Select-O-Matic transmissions on their trucks—customers, owners, operators, drivers and maintenance men alike. Get the full story on performance-perfect Select-O-Matic transmissions from your INTERNATIONAL Truck Dealer or Branch International Harvester Company, Chicago.



be more than 2,000 hours with two batteries. The light is daylight-controlled by photocell—off during the day and on at dusk, night, or on gray or stormy days.

For further information write to Star Headlight & Lantern Co., Dept. C&E, W. Main St., Honeoye Falls, N. Y., or use the Request Card at page 18. Circle No. 126.

New plastic waterstop has hollow 'core'

Joseph T. Ryerson & Son, Inc., has added a plastic waterstop, used for sealing joints in concrete, to its line of industrial plastics.

The Ryertex-Omicron PVC water-

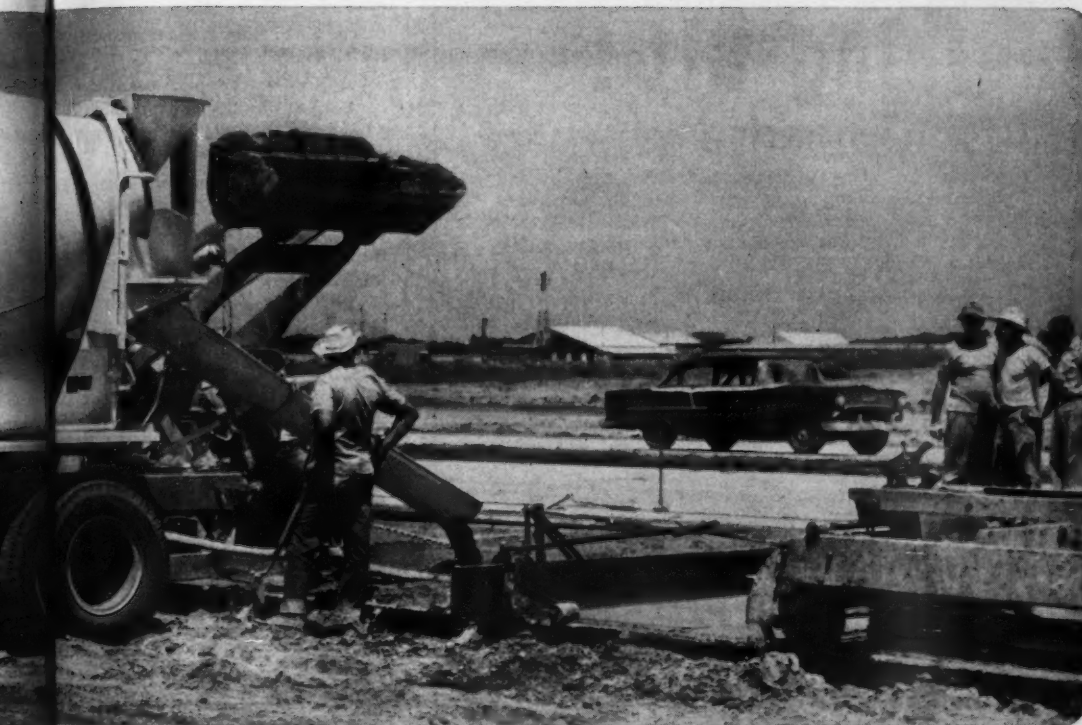


stop, of ribbed design for high holding power in concrete, has a hollow center bulb for extra flexibility and elasticity, the manufacturer reports. It comes in 50-foot coils 3/16 inch thick, in 4, 6, and 8-inch widths.

The company reports that the new waterstop will not corrode, provides maximum durability and watertightness, will not harden or crack with age, and is not subject to electrolytic action. It may be cut with a hand saw or sharp knife and can be spliced or butt-welded with the application of heat.

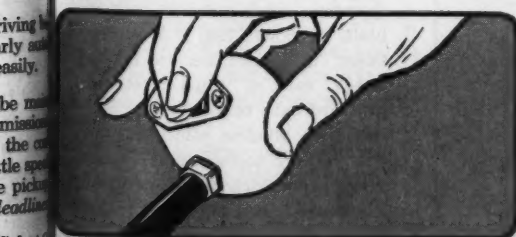
For further information write to Joseph T. Ryerson & Son, Inc., Dept. C&E, Box 8000-A, Chicago 80, Ill., or use the Request Card at page 18. Circle No. 127.

The driver 3. The schedule



transmission. This husky 33,000 lb. GVW rated 6-wheeler won't quit under any circumstances.

SELECT-O-MATIC transmissions on your payroll



Press this "Magic Button" for savings
Solenoid-controlled clutching is so convenient and so effortless, it has become the talk of the truck stops. With less work and less fatigue, drivers are able to give full concentration to driving. They are better able to select and maintain the gear to meet the terrain. Much of the time and labor is taken out of the job.

INTERNATIONAL TRUCKS WORLD'S MOST COMPLETE LINE **IH**

For more facts, use Request Card at page 18 and circle No. 393

AUGUST, 1961

Sign of **DIXON** Quality
For Nearly Half a Century



"GJ-BOSS"

GROUND JOINT
FEMALE COUPLING, X-34

*Its Reputation
Recommends it*

FOR PILE DRIVING AND
OTHER STEAM SERVICE;
AIR, WATER, HYDRAULIC,
OIL AND GAS HOSE

High or Low Pressure

Always reliable for durability and safety. Ground joint union between stem and spud provides washerless, permanently leakproof seal. All parts steel or malleable iron, rust-proofed. Furnished with super-strong "Boss" Offset Interlocking Clamps. Sizes 1/4" to 6", inclusive.

Washer Type Coupling—"Boss" W-16.
Companion Male Coupling—"Boss" MX-16.

Stocked by Distributors and Manufacturers
of Industrial Rubber Products

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO • BIRMINGHAM • LOS ANGELES • HOUSTON
DIXON VALVE & COUPLING CO. LTD. TORONTO, CANADA

For more facts, circle No. 394



Product Parade—These Products Can Help Widen Your Profit Margin

The new Caterpillar 619 Series C tractor-scraper is available with either torque-divider, power-shift or direct-drive transmission.

Power-shift transmission for new tractor-scraper

A new power-shifted Model 619 tractor-scraper, the Series C, with 280 maximum horsepower has been announced by Caterpillar Tractor Co.

Major features include 18-cubic-yard heaped capacity, an all-new-design turbocharged engine, 30-mph road speed, air-actuated cable control, and unitized construction.

The torque-divider, power-shift transmission provides nine speeds with only three shifts. As load re-

sistance is overcome, the transmission automatically shifts within each speed range from torque-divider drive to direct drive to overdrive. Downshifting also is automatic in each range, according to the manufacturer. A 6-speed direct-drive transmission is also available.

For further information write to Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 12.

Concrete testing machine has 400,000-lb. capacity

A new concrete-block testing machine of 400,000-pound load capacity is available from Solitest, Inc. The machine is capable of testing concrete blocks in sizes up to 9 x 9 x 18 inches or standard 6 x 12-inch concrete test cylinders.

The tester has been designed for quality control of prestressed-concrete products, concrete blocks, ready-mix concrete, and other concrete products, the company reports.

Loads are developed by means of a hand-operated, 2-speed concentric pump that actuates the main hydraulic loading cylinder.

For further information write to Solitest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 47.

New auger backfiller with special transmission

A new auger backfiller described as a multipurpose machine with infinitely variable speeds and heavy-duty capacity is offered by Speicher Bros. According to the manufacturer, the



machine can be driven from one job to another at road speeds of up to 20 mph, and can backfill at speeds of from 0 to 2 mph.

A hydrostatic transmission controlled by a single valve gives forward or reverse speed instantly, with virtually no power loss, it is reported. Power is transmitted to all four wheels, each of which is equipped with hydraulic brakes.

A ditch blinding attachment permits putting topsoil from 3 inches deep to completely filling the trench. Three-point suspension is said to make mounting and unmounting of the auger assembly fast and easy.

For further information write to Anchor Sales Corp., Dept. C&E, 1100 Shimp Drive, Celina, Ohio, or use the card at page 18. Circle No. 69.



Miss Southern Tire Announces:

Something BIG! World's Largest Retreading Mold

Southern Tire Company now offers the largest production capacity and range of sizes of any retreading shop in the world. New equipment enables Southern Tire to retread sizes no other plant can handle. Southern's new giant-tire mold, occupying an area of 2000 square feet, can handle the following sizes: 26.5 x 29, 29.5 x 35, 3000 x 33, 33.5 x 39 and 37.5 x 33.

For quality rubber, on-site pick-up and delivery, specify an Independent — specify Southern Tire.



**SOUTHERN
TIRE COMPANY**

1414 Broadway
SHEFFIELD, ALA.

Phone Collect
EV 3-2312



For more facts, use Request Card at page 18 and circle No. 339

memo to all contractors:



Available in gasoline-electric-universal drive models. Engine-driven models come equipped with discharge priming tee, strainer and nipple for suction hose. Wheel kits available as option.



BARNES MANUFACTURING CO.
Manford, Ohio - Oakland, Calif.

Barnes' new 5m and 7m Series SPC's are now the most advanced (and dependable) on the market. Here are the reasons:

venturi priming principle: Primes itself in 16 seconds — and does it with less liquid in pump body than other SPC's.

economical: Pumps 33,000 gallons on one gallon of gas.

greater capacity: Up to 135% more capacity than former models.

easily serviced: Volute, impeller and seal exposed by removing 3 nuts. Makes on-the-job servicing faster and easier than ever.

Note: These are only a few of the advantages of Barnes' new and complete SPC line. Your local Barnes distributor has all the answers. See him today.

FREE LITERATURE: Barnes has free descriptive literature on its sensational new SPC line, detailing complete specifications and performance. Write for it today.

For more facts, use Request Card at page 18 and circle No. 340

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 Circle No. 128.

AUGUST, 1961



Offer plastic-lined cooler in 4 sizes

Horton Products, Inc., announces four new plastic-lined water coolers. The new models are available in 2, 3, 5, and 10-gallon sizes, and are for either hot or cold liquids.

A galvanized-steel, corrugated outer wall is used for the new coolers, and urethane foam forms an insulating layer between the outer wall and the plastic lining. A recessed spigot made of molded plastic is said to offer longer life and to eliminate heat transfer from within the cooler.

For further information write to Horton Products, Inc., Dept. C&E, P. O. Box 7156, Memphis 18, Tenn., or use the Request Card at page 18. Circle No. 31.

New unit spray-applies variety of materials

A new texture machine with hopper mounted on the gun is announced by the Goldblatt Tool Co. The gun



spray-applies dry-wall textures, acoustic plasters, texture paints, waterproofing, and other materials.

Called the Pattern Pistol, the new gun features an unusually lightweight plastic hopper, five orifices that are permanently attached to the gun, and one-man portability, the manufacturer reports.

The machine comes complete with 110-volt single-phase motor; rotary-vane compressor; 50 feet of 1/2-inch hose; and 25 feet of power cable.

For further information write to the Goldblatt Tool Co., Dept. C&E, 1113 Walnut St., Kansas City 41, Mo., or use the Request Card at page 18. Circle No. 128.

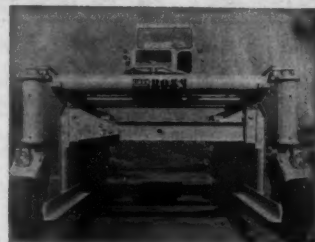
New straddle carrier handles steel sections

A new Clark-Ross straddle carrier equipped with traversing load hooks for handling steel sheet and plate of varying widths has been introduced by the Industrial Truck Division of Clark Equipment Co. Designated the Series 100 Model 90130 carrier, the unit has a capacity of 40,000 pounds.

The carrier will handle loads up to 30 inches high. Load hooks can be adjusted individually or simultaneously to carry loads varying from 36 to 102 inches wide. Raising, lowering, and

traversing of loads is accomplished hydraulically. A Hercules six-cylinder, truck-type gasoline engine, rated at 145 horsepower, with a displacement of 404 cubic inches, powers the carrier. The carrier has a top travel speed (with maximum load) of 20 mph.

For further information write to Clark Equipment Co., Industrial Truck Div., Dept. C&E, P. O. Box 31, Battle Creek, Mich., or use the Request Card at page 18. Circle No. 60.



The new Clark-Ross Model 90130 straddle carrier is equipped with traversing load hooks for handling steel sheet and plate.



FOR DRAIN TILING—TRENCH TO PRECISE SPECS—FASTER—WITH A CLEVELAND J-30

Job reports on the Cleveland J-30 show it has dug up to *four times* as much trench per day as machines it has replaced on highway drainage jobs like the above. The J-30 gives you "trench on tap"—lets you schedule operations closer to beat bad weather—cuts your costs in many different ways with such features as these:

- 100% control of every machine function at the operator seat—with complete visibility of every job operation
- Positive full-range boom hoist—makes grade adjustments fast and easy
- Perfect balance and stability on the world's finest trencher crawler—a tremendously long-lived, easy-rolling, 1,000-hr.-lubricated track
- Digs to precise width and grade—no excess aggregate or other fill material costs
- V conveyor automatically shifted, hydraulically driven—for more efficient spoil placement or load-out
- Over 30 usable digging speeds at operator's control—the right combination of power and speed for every soil and digging condition

GET ALL THE FACTS ON THE J-30
AND OTHER OUTSTANDING CLEVELANDS
—CHECK THEM NOW WITH YOUR DISTRIBUTOR.



CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

For more facts, use Request Card at page 18 and circle No. 341



A BEAR FOR WORK!



La Crosse Triple Axle Trailers

Your trailer dollars work harder...stretch farther...and return faster...when you get the built-in ruggedness of a La Crosse Trailer. The single point suspension of a La Crosse Triple Axle Trailer equalizes load distribution without bending or distortion. See your La Crosse Dealer soon for Triple Axles, Tilts, Low Beds and Removable Goosenecks.

LaCROSSE
TRAILER CORPORATION

418 Gould Street La Crosse, Wisconsin

For more facts, use Request Card at page 18 and circle No. 345

45 LEVER TYPE models to choose from!

THE WORLD'S MOST COMPLETE LINE SIMPLEX LEVER JACKS



SINGLE ACTING, BRIDGE LOWERING

11 Models, 5 to 20 tons capacity. Full capacity on toe or cap.



EMERGENCY & BRIDGE JACKS

2 Models, 15 tons capacity. Pivot on base.



GEARED JACKS

3 Models, 25 to 35 tons capacity. Side toe lift.

MINE TIMBER JACKS

4 Models (One has trip mechanism). Single and double acting.



POLE PULLING & STRAIGHTEN- ING JACKS

3 Models (One aluminum alloy) 5 to 15 tons capacity. Standard of Bell System.



REEL JACKS

3 Models (One Aluminum alloy) 5 to 10 tons capacity. "H" Base.



TRACK (TRIP) JACKS

13 Models (Five aluminum alloy) Single and double acting.

BELT TENSIONING JACK

5 ton capacity.



Also Lever type, Cable & Wire Tensioning, Pipe Pushing & Pulling, Tie Remover, Tie Replacer, and Siding & Flooring Jacks.

Look for further information on Hydraulic and Screw Jacks in other advertisements.

TEMPLETON, KENLY & CO. 2511 GARDNER ROAD BROADVIEW, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 346

A POWER PACKED PROFIT PRODUCER SPEICHER'S *tandem* traction TRENCHER

THE ONLY HEAVY DUTY
TRENCHER ON RUBBER
TIRED WHEELS...WILL
TURN IN 24' RADIUS



For real ditching mobility and versatility, a SPEICHER tandem traction trencher can't be beat. Big or small jobs, near or far, you can drive this trencher to location at speeds up to 30 M.P.H. No time consuming loading on semi.

Cuts up to 6 ft. depth, from 12 to



Side mounted controls are at operator's fingertips. Permits operation from standing or sitting position, on or off the platform.

24 inches, with a digging speed of one to thirty feet per minute. Exclusive weight shifter lets you shift weight from front to back or from back to front at will. Low cost maintenance—long life. Write today for descriptive literature—we'll let the facts sell this trencher.

Dealer
Inquiries
Invited

Write, Phone
or Visit

ANCHOR SALES CORPORATION

1109 Shimp Drive, Celina, Ohio

For more facts, use Request Card at page 18 and circle No. 347

New submersible pumps fit in small openings

New Slim Jim 1½-inch electric submersible pumps of 90-gpm capacity at 10-foot head and only 5½-inch maximum diameter are being offered by the Speed King Division of Jaeger Machine Co. Their slim design allows



these pumps to slip into small openings or pipes.

This ¾-hp single-phase pump is offered in models operating at 115 and 230 volts. Both have capacitor starting, with capacitor, relay, and underwriter-approved switch in weather-proof control box. Capacities are 90 gpm at 15-foot head, 42 gpm at 30-foot head, and 20 gpm at 35-foot head.

For further information write to Speed King Division, Jaeger Machine Co., Dept. C&E, 550 W. Spring St., Columbus 16, Ohio, or use the Request Card at page 18. Circle No. 41.

Vest-type safety jacket for bridge workers

GenTex Corp. offers a vest-type, Coast Guard-approved safety jacket designed for bridge workers, offshore rig workers, and others who work near water.

Features include removable flotation pads; lightweight, permanently buoyant expanded vinyl foam construction; and resistance to gas, water, grease, or oil. The jacket is designed for maximum freedom of movement, long life, and low maintenance costs, according to the manufacturer.

For further information write to GenTex Corp., Dept. C&E, 450 7th Ave., New York 1, N. Y., or use the Request Card at page 18. Circle No. 15.

New pneumatic compactor has exclusive features

A new 9-wheel pneumatic-tire compactor featuring cockpit control of tire inflation, plus three exclusive features, has been announced by the Tractor Equipment Division of Hyster Co.

From the centrally located cockpit of the new C500-A, the operator reportedly can control tire inflation to meet ground-contact pressures for any job requirement. Standard tires are 9.00 x 20, 12-ply, and they permit a range of inflation pressures from 35 to 100 psi.

Vertical oscillation of each wheel

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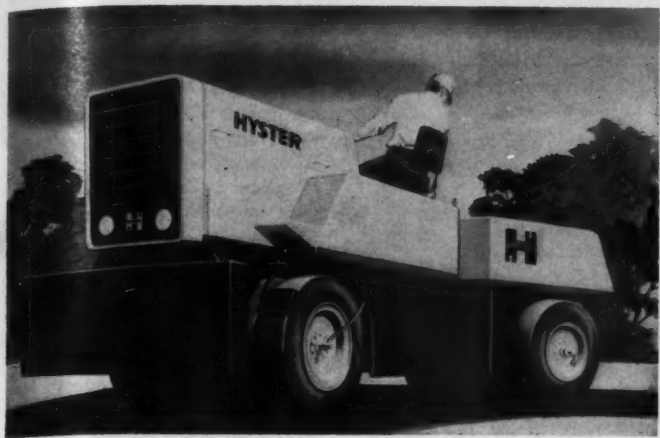
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RUEMER
3887 No. Palm

For more
AUGUST, 1961



The new Hyster C500A pneumatic compactor.

and center-point steering have been designed into the new compactor. Vertical oscillation is said to provide equal tire loading for uniform compaction and maximum traction, to eliminate tire scuff, and to prevent bridging low spots in the surface.

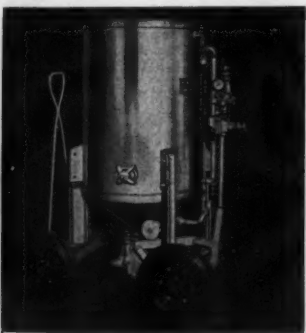
For further information write to Hyster Co., Tractor Equipment Division, Dept. C&E, P. O. Box 328, Peoria, Ill., or use the Request Card at page 18. Circle No. 8.

Offer two new brackets for concrete forming

Two new items of form hardware have been placed on the market by Symons Clamp & Mfg. Co.

A new haunch bracket is designed for use in pouring corbels, haunches, or offsets. Plywood is tacked onto the bracket, and brackets are connected with standard hardware to Symons Steel-Ply forms. A new cantilever bracket permits monolithic placement.

For further information write to Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 5.



RUEMELIN SAND BLASTS

... provide fastest cleaning action. Remove rust, paint, scale from highway equipment, ready-mix drums, rail or highway bridges, water towers. Available in several sizes, in stationary or portable mountings. Hi-speed trailer mounts permit easy handling. Units available with wet nozzles and remote controls at nozzle for instant stop and start control.

Write for descriptive bulletin.
RUEMELIN MFG. CO.
3887 No. Palmer St., Milwaukee 12, Wis.

For more facts, circle No. 348

AUGUST, 1961

PERMITE

CHEMICALLY ENGINEERED CONSTRUCTION MATERIALS



JOINT SEALERS

HOT-POURED and COLD-APPLIED TYPES

Rubber Asphalt Compound provides positive seal, requires minimal maintenance—prolongs useful life of roads, streets, turnpikes, bridges, parking areas, etc.

Among other PERMITE CHEMICALLY ENGINEERED CONSTRUCTION MATERIALS are: N-TAIR Air Entraining Agent, Concrete Curing Compounds and Transparent Concrete Curing, Sealing and Hardening Compound.

See your PERMITE Distributor, or write direct for details.

PERMITECO, INC. CONSTRUCTION MATERIALS DIV.

P. O. BOX 206, STATION A, DAYTON 2, OHIO



For more facts, use Request Card at page 18 and circle No. 350



Now a new converter with a 3.6:1 ratio and POWER-LOAD-LOWERING SAFETY, TOO

Now, from Allison, comes a converter with new efficiency, new design elements, new low prices that gives you the safety of power-load-lowering and 3.6 to 1 stall-torque ratio too.

It's the new Allison TC-400 TORQMATIC Converter, a breakthrough in converter design from the people who make the world's most complete line of hydraulic drives.

The TC-400 is as new as tomorrow—but incorporates the time-proved TORQMATIC design features which for years have demonstrated their merit on tough job after tough job.

It can handle from 150 to 250 horsepower, is far more efficient than other converters in its range. It's available with a front disconnect clutch, industrial or automotive flange, tailshaft governor and integral charging pump for operating customer transmissions.

And this 3-element converter offers you a choice of 3 different stall-torque multiplication ratios—from 2.9 to 3.6 to 1—at no extra cost.

Want the full story? Mail the coupon—today.

Allison TORQMATIC DRIVES

The World's Most Complete Line of Hydraulic Drives

Over 980 Models used by 108 Manufacturers in 100 to 525 H.P. Equipment



ALLISON DIVISION OF GENERAL MOTORS
DEPT. CE-3, INDIANAPOLIS 6, INDIANA
Please send me application data on your TC-400 TORQMATIC Converter.

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 349

New unit spreads behind, ahead of rear wheels

A new hydraulic spreader which can be used to spread either before or behind the carrier's rear wheels without reversing the hopper is announced by Shunk Manufacturing Co. This unit is called the Shunk-Torwel combination front and rear spreader.

The new spreader is an all-purpose, year-round unit requiring no adaptations or attachments for seal coating in summer or spreading for snow and ice control in winter. Dual 14-inch spinners located in front of the rear wheels are combined with a single 18-inch spinner at the rear. Spinners are hydraulically actuated by a se-



lector valve in the cab which works in combination with the conveyor.

For further information write to

Shunk Mfg. Co., Inc., Dept. C&E, Bucyrus, Ohio, or use the Request Card at page 18. Circle No. 63.

Nuclear device tests density, moisture

A new push-button nuclear device for making rapid measurements of the density and moisture in soils, aggregates, and pavements is announced by Viatic Division of Tellurometer, Inc. The portable instrument, called the Hydro-Densimeter, is said to permit inspectors or contractors to take a reading of both the moisture and density of material being compacted in just 60 seconds.

The new electronic device is recommended for use on highway, airport, and dam work, as well as on other construction projects. A surface probe can measure density at depths

of 2½ to depth of 4 which can be



EIMCO 126 FRONT END LOADER

HOW DO YOU KNOW YOU ARE BUYING THE BEST FRONT END LOADER?

If you haven't thoroughly checked the Eimco 126 Front End Loader, you don't! Strong claim . . . but no stronger than the facts. Eimco crawlers are engineered and constructed to a standard of quality and craftsmanship unmatched anywhere. ENGINEERED AND BUILT BY THE WORLD'S MOST EXPERIENCED PRODUCER OF UNDERGROUND ROCK LOADING EQUIPMENT, ITS HERITAGE IS APPARENT IN ITS FAR HEAVIER STEEL CASTINGS, MASSIVE, STURDY COMPONENTS AND ABILITY TO OUTPRODUCE, OUTLOAD, OUTMANEUVER AND OUTLAST ANY OTHER CRAWLER-LOADER IN ITS CLASS. Before you buy your next loader, check the facts on the dependable Eimco series.

Write for the address of the branch or dealer nearest you and see this powerful machine demonstrated. And ask for specifications and for Bulletin LE-1126.

The EIMCO Corporation

Head Office: 300 Lake City Rd., Utah, U.S.A.
Export Office: 22 South St., N.Y.



Advanced Engineering and Quality Craftsmanship Since 1884

For more facts, use Request Card at page 18 and circle No. 351

BUILDING PRODUCTS

INSERTS

Richmond

your most reliable source for all quality

FORM-TYS, HARDWARE, BUILDING PRODUCTS and ACCESSORIES

FORM-TYS and ACCESSORIES

FORM-TYS and ACCESSORIES

For 50 years Richmond has applied its hard earned know-how and experience to developing the most expanded and versatile line of engineered tying devices, anchorages, inserts and accessories for concrete construction. Richmond's complete line of dependable, laboratory tested form-tys, hardware, building products and accessories for light concrete construction provide you with a reliable, single source which will save you time and money safely.

Shown here are some of Richmond's typical items for concrete building work. For complete information about the full line send for FREE literature . . . and, if you have any specific concreting problem let our Technical Department help you. Write to:

1911-1961 50 YEARS OF PROGRESS

Richmond
SCREW ANCHOR CO., INC.

INSIST ON RICHMOND
AND BE SURE IT'S RICHMOND

MAIN OFFICE: 816-838 LIBERTY AVE., BROOKLYN 8, N. Y. SALES OFFICES, PLANTS & WAREHOUSES: FT. WORTH, TEX. ATLANTA, GA. • LAUREL, MD. • ST. JOSEPH, MO. • WALTHAM, MASS. IN CANADA: ACROW-RICHMOND, ORANGEVILLE, ONT.

For more facts, use Request Card at page 18 and circle No. 352

CONTRACTORS AND ENGINEERS



The Hydro-Densimeter, a nuclear device for rapid determination of density and moisture content of compacted soils, aggregates, and pavements.

of 2½ to 12 inches; moisture to a depth of 4 inches. Another probe, which can be used to measure density

at greater depths, is available.

For further information write to Viatec Division of Tellurometer, Inc.,

Dept. C&E, 206 Dupont Circle Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 50.

Offer new lightweight 2-inch impact wrench

Chicago Pneumatic announces development of the new CP-616 impact wrench claimed to be the lightest 2-inch-capacity air-operated wrench on the market.

Equipped with a roll-type side throttle handle and a "dead" handle, the CP-616 features a malleable-iron clutch housing, with a lightweight aluminum housing optional.

For further information write to Chicago Pneumatic Tool Co., Dept.



C&E, 6 E. 44th St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 39.



The Hanson mechanical materials handling crane is a rugged, maneuverable rig that is saving time and reducing materials handling and labor costs for thousands of contractors and industrial plant engineers.

To see how a Hanson 3 or 5 ton mechanical, or a 6 ton hydraulic crane can meet your specific needs, call your Hanson dealer or write to Hanson Machinery Co., Tiffin, Ohio.

this is Hanson!

HANSON

Builders of some of the country's finest shovels and cranes of the smaller capacities.

MATERIALS HANDLING CRANES Mechanical and hydraulic. 3, 5 and 6 ton.

EXCAVATORS Crawler, rubber and truck mounted: ¾ to 1 yard shovels; 5 to 25 ton cranes.

Dealerships in some areas still open.

HANSON MACHINERY CO.
TIFFIN, OHIO

For more facts, use Request Card at page 18 and circle No. 353

SAVE DOWNTIME on asphalt distributors and road equipment



TAR-X is fast! economical! easy to use!

1. spray, paint or mop TAR-X on surface
2. let TAR-X penetrate 15 minutes or more
3. hose off deposits with clear water and pressure hose
4. hurry back to paint

You Can Rely on

Certified

CERTIFIED LABORATORIES

FORT WORTH

SAN FRANCISCO

NEW ORLEANS

P. O. BOX 2493 • FORT WORTH, TEXAS

For more facts, use Request Card at page 18 and circle No. 354

AUGUST, 1961

ONE COMPANY DOES A LOT MORE



ANOTHER PROBLEM SOLVED BY AIRPLACO

An Airplaco Concrete Placer being used to pour concrete in construction of tanks for new water treatment plant. Concrete is "air extruded", through tubing from transit-mix trucks, up through center of tank. Tubing revolves full 360° to all points. Deep cut in foreground makes truck-crane-and-bucket pour impossible. Man in orange hat is the Airplaco Man-on-the-Job.

AIRPLACO Men on the Job

When Airplaco equipment goes out on a job, it is backed up by Airplaco factory trained service men. Airplaco's Men-on-the-Job are there to train and certify the operating crew so that you get peak performance at all times. This is the "extra effort" that means extra profit for you.

AIRPLACO "Advanced Design" Equipment

Years of research, testing and specialization in the field of pneumatic placement, make Airplaco equipment the most flexible, most versatile equipment you can operate. Every piece of Airplaco equipment, from the smallest concrete gun through a complete line of placement equipment, to the largest Concrete Placer, is job-rated to deliver quality concrete with speed, ease and economy.

Put AIRPLACO on Your Team

All of the experience and knowledge gained over the years, and on many, many jobs, is available to you without cost or obligation. Our Field Engineers are ready to tackle your toughest concrete problem and show you how AIRPLACO can save you time and money . . . and best of all . . . make a profit. Write, wire or phone.



PLUS FREE BROCHURE



1007 W. 25th St. • Kansas City 8, Mo.

For more facts, use Request Card at page 18 and circle No. 355



United Air Lines new base at Chicago's O'Hare Field

Symons Forms Used to Pour Reservoir

Wm. E. Schweitzer Construction Company, Evanston, Illinois used Symons Forms to pour a Reservoir 200' long by 58' wide by 17' high. Approximately 1/3 of the walls were poured in one operation. The entire hangar is resting on a 2' 9" base pad which was also poured with Symons Forms. Symons Column Clamps were used to form columns. Symons Forms are rented with purchase option. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. H-1, Chicago 39, Illinois.

For more facts, use Request Card at page 18 and circle No. 356

THE NEW BIG NAME IN COMPACTION!

Aeroil
SINCE 1917

ZETTELMEYER

VIBRATORY ROLLERS

Meet the newest, most productive vibratory rollers on the American scene. Each is geared to handle a specific compaction job . . . and handle it in the least time — at the least cost of any compactor you can buy.

Tested and proven over seven years of handling compaction on jobs throughout the world, these machines offer unmatched production and dependability for your compaction requirements.



VIBRA-TWIN

An unequalled rolling width of 83" provides up to 20% more compacted area per pass. Dual roller design adapts to ground surface — providing maximum compaction effect at all times. Independent rollers take sharp turns without displacing compacted material or damaging the rolled surface.

VIBRA-TANDEM

The only diesel powered roller in its class! Rugged, heavy-duty construction assures continuous high production with minimum operating costs. A single lever switches off vibratory mechanism for use as a 1-1/2 ton static roller.



Aeroil
SINCE 1917

ZETTELMEYER

AEROIL PRODUCTS CO., INC.
69 WESLEY ST., SOUTH HACKENSACK, N. J.

Distributors throughout the United States
Factory Service Centers - Los Angeles, Chicago.

Send for detailed brochure and specifications

For more facts, use Request Card at page 18 and circle No. 357

Product Parade—These Products Can Help Widen Your Profit Margin

Offer new, portable engine-generators

New portable engine-generators are announced by Katolight Corp. The new series is available in sizes of 1,000, 2,000, 3,000, and 4,000 watts ac, 3,600 rpm. These new units are light in weight.

Features include Briggs & Stratton engines, pull starter, protective carrying frame, and rubber mounts, with optional wheel dollies and housing if desired.

For further information write to Katolight Corp., Dept. C&E, P. O. Box 891, Mankato, Minn., or use the Request Card that is bound in at page 18. Circle No. 36.

Announce new, improved material-handling rig

American Road Equipment Co. has announced several improvements in its Model 620 Econmobile material-handling vehicle.

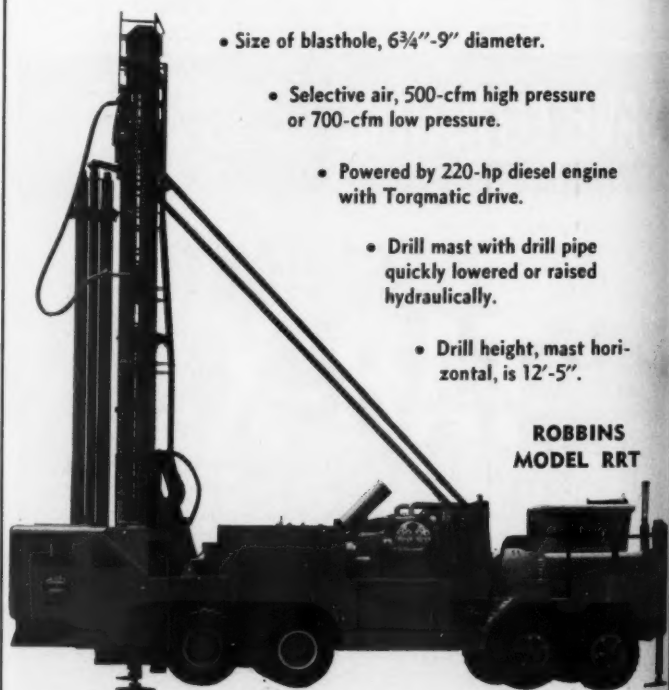
Total working weight has been increased from 15,010 to 16,715 pounds, with better load distribution. A new pump coupling utilizes a universal joint, instead of a chain and sprocket, for long life. A new power steering system consists of an orbitrol (modified hydraulic valve) and cylinder on the tie rod.

A self-adjusting, self-leveling system is designed to keep the operator level even when the machine is on a slant.

NEW! a heavyweight rotary drill with maximum PORTABILITY

This new ROBBINS Model RRT truck-mounted rotary drill has a rated down pressure capacity of 50,000 pounds.

Mounted on tandem axles with a capacity of 72,000 pounds (acceptable in most states), this rugged rotary drill moves easily from one job to another. One portable ROBBINS RRT can do the work of several rotaries. A company owning several quarries within a 100-mile area, for example, could use a single Model RRT to drill in all of them — replacing several smaller drills and their crews.



• Size of blasthole, 6 3/4"-9" diameter.

• Selective air, 500-cfm high pressure or 700-cfm low pressure.

• Powered by 220-hp diesel engine with Torqmatic drive.

• Drill mast with drill pipe quickly lowered or raised hydraulically.

• Drill height, mast horizontal, is 12'-5".

ROBBINS
MODEL RRT

ROBBINS MACHINE & MANUFACTURING CO.

P.O. Box 281

Oneonta, Ala.

Phone, Crestwood 4-3011

For more facts, use Request Card at page 18 and circle No. 358

CONTRACTORS AND ENGINEERS

Product

The new, im-
mobile mate

and to auto
operator's we
For further
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C&E, 4201 M
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Line of h
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IF IT
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AUGUST, 1961



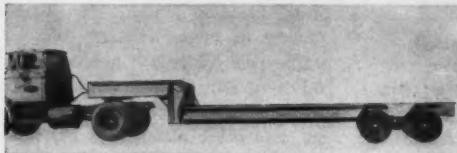
The new, improved Model 620 Econmobile material-handling vehicle.

New line of low-bed equipment trailers

Wisconsin Traller Co. has introduced a new line of low-bed, heavy-duty gooseneck trailers.

Models are available in 22, 27, and 30-ton capacities, with a choice of straight, drop, or beaver-tail deck. Standard deck lengths are 23 feet; longer lengths can be built to order.

The new goosenecks have doubler plates at all critical wells, providing permanent strength and true, lifetime trailer alignment, according to



The new Wisconsin line of low-bed gooseneck trailers includes 22, 27, and 30-ton-capacity models.

the manufacturer. Extra-heavy wide-flange beams run the length of the deck. An 8-foot-wide deck permits side or end loading of any type of construction machinery, it is reported

by the company.

For further information write to Wisconsin Traller Co., Inc., Dept. C&E, Richfield, Wis., or use the Request Card at page 18. Circle No. 2.

and to automatically adjust to the operator's weight.

For further information write to American Road Equipment Co., Dept. C&E, 4201 N. 26th St., Omaha 11, Nebr., or use the Request Card at page 18. Circle No. 43.

Line of heat-treated, durable plow bolts

An improved line of heat-treated plow bolts is announced by Paper, Calmenson & Co. The new bolts have thicker heads, which is said to make them last up to three times longer than other plow bolts.

The design of Pacal plow bolts includes full square corners on the shank to prevent turning.

The new line of bolts is available in five diameters from 1/2 to 1 inch and in any desired length.

For further information write to Paper, Calmenson & Co., Dept. C&E, County Road B and Walnut St. at Highway 36, St. Paul 13, Minn., or use card at page 18. Circle No. 24.

DON'T BUY ANY VIBRATORS

Yes, don't buy or rent any vibrators until you have thoroughly investigated the complete line of . . .



For thorough investigation send today for name of your nearest distributor or, ask for our brochure describing our complete line . . . remember . . .

IF IT VIBRATES DART MAKES IT!

dart MFG. & SALES CO.
1002 South Jason Street
Denver, Colorado

For more facts, circle No. 359

AUGUST, 1961



H. J. Williams Company, Inc., of York, Pa., was general contractor; subcontractor for overpasses: John H. Wickersham Engineering & Construction, Inc.; guard rail erected by L. S. Lee & Son, Harrisburg; steelwork fabricated and erected by Lehigh Structural Steel Company, Allentown, Pa.

This interchange is a showcase for Bethlehem road steels

This double interchange is near Lancaster, Pa., connecting Route 230 By-pass, Route 222, and Route 501. Built into the concrete pavement are Bethlehem bar mats, dowel units, and other paving steels. Bethlehem structural steel and reinforcing bars were used in the overpasses, and Bethlehem cable guard rail protects various points in the interchange.

Bethlehem supplies the largest line of steel products for highways in the country—quality steel products for every operation from ground-breaking to completion of the road. Whatever your needs, you can count on this single source for steel products with reliability, rugged performance, and full compliance with state and federal standards.



for Strength
... Economy
... Versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



For more facts, use Request Card at page 18 and circle No. 360

Distributor Doings

B-L-H holds sales school

A 2-day sales school for a group of dealers and their sales personnel was held by the Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio. The complete line of B-L-H shovels, cranes, and draglines, was shown in motion pictures and slides.

New dealers for Oliver

Oliver Corp., Chicago, Ill., has named Eagle Machinery Co., Uwchland, a distributor for eastern Chester

County in Pennsylvania.

The new dealer will handle a full range of Oliver wheel and crawler tractors with dozers, backhoes, loaders, and other allied equipment for light construction jobs.

Broderick Motors, Plattsburg, N. Y., has been appointed a dealer for Oliver construction equipment in Plattsburg and vicinity.

Detroit Diesel dealer

Emerson GM Diesel, Inc., 5707 E. Marginal Way, Seattle, Wash., has been appointed a distributor by the

Detroit Diesel Engine Division of General Motors, Detroit, Mich., for the division's line of truck, industrial, and marine diesel engines in western Washington and a section of southern Alaska. Modern Motors will continue as a Detroit Diesel distributor at Anchorage, Alaska, and also as distributor for other products of General Motors.

Yale division names dealer in Florida

The Yale Materials Handling Division, The Yale & Towne Mfg. Co., Philadelphia, Pa., has named the Simplex Sales Co., Inc., 1415 S.E. 10th Ave., Hialeah, Fla., franchised representative for Yale industrial lift trucks and tractor shovels.

Diesel Energy names two new distributors

Diesel Energy Corp., New York, N. Y., has appointed two new distributors.

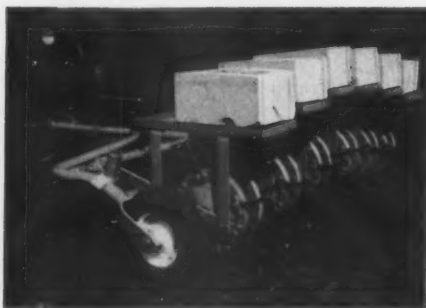
Air Engineering Corp., 250 Greenville St., Battle Creek, Mich., has been named a dealer for the state of Michigan, with the exception of the Upper Peninsula. The dealer also has branches in Kalamazoo and Jackson, Mich.

Equipment Service Co., Inc., 617 N. 9th St., Birmingham 4, Ala., has been appointed a distributor for Alabama and the part of Florida directly south of Alabama.

Equipment Service has a branch office that is located at 405 N. Royal St., Mobile.

Ryan RENOVAIRE delivers exclusive true contour aeration

... builds and maintains better turf at lower cost



STUDY THE PICTURE:

It shows how the Renovaire's individually suspended wheel pairs plus individual weighting trays give full penetration of tines and blades over undulating turf, thus reach the spots that will benefit most from aerating, slicing and thinning, or complete renovating!

With this one unit, you're set to do complete renovating jobs (and that means saving the cost of annual re-sodding) ... to slice and thin choked turf ... and to aerate turf for better fertilizer and moisture retention, overall better growth and appearance. Specially designed tines and blades for each of these jobs are made of genuine agricultural tool steel. The RENOVAIRE hitches to any tractor, works at speeds up to 10 mph to cover big areas fast. It's available in the 8' Monarch (shown) and in the 4 1/2' Chief.

CONTROLLED
YEAR 'ROUND AERATION
WITH RYAN
QUICK CHANGE
TINES

- ① Spring-coring
- ② Summer slicing
- ③ Fall renovating



Whether turf building and maintenance is 10% or 100% of your job, a Renovaire will help you get healthier, better looking turf at lower cost. Get full performance details and specifications today from your Ryan distributor, or write:



LANDSCAPING
EQUIPMENT CO.

871 Edgerton St., St. Paul 1, Minn.

For more facts, use Request Card at page 18 and circle No. 361

New dealer named by Bucyrus-Erie

Northern Equipment Co., 1420 W. Chestnut, Enid, Okla., has been appointed a distributor by Bucyrus-Erie Co., South Milwaukee, Wis.

The new dealer will handle sales and service on a full line of B-E crane-excavators, dragline buckets, Transit machines, and truck-mounted, all-hydraulic Hydrocrane equipment in nine counties in western Oklahoma.

New L-W distributors

LeTourneau-Westinghouse Co., Peoria, Ill., has named two new distributors.

Rushing & Mason Equipment Co., 5111 Asher Ave., Little Rock, Ark., will handle sales, service, parts and rentals of L-W's line of equipment in nine counties in Arkansas.

Robert S. Rocky Mt. Equipment Co., 215 S. Colorado, Butte, Mont., has been named an L-W distributor for Silver Bow, Beaverhead, Granite, Deer Lodge, and Powell counties in Montana.

BRUSH-MATIC Time-Proven Brush Saw



POWERFUL
RUGGED
PORTABLE
light weight

Ten inch saw blade easily flush-cuts and trims toughest brush, undergrowth and small trees to ground level.

WORKS FASTER THAN SIX MEN CUTTING BRUSH BY HAND!

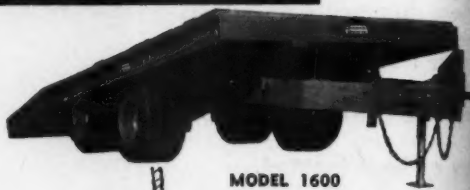
• Drastically reduces labor costs. Big time and money-saver for construction crews, surveyors, fence and pipe line contractors. PERFORMANCE-PROVED by many utilities, railroads and lumbermen. SAFE! — fastens securely at operators' waist, protecting body and limbs from moving blade. Efficient 4.7 cu. in. gasoline engine. Automatic clutch, oversize flexible drive shaft absorbs shock and eliminates power-robbing gears. REPAYS ITS LOW COST — FAST! Write TO-DAY for prices and facts.

R. M. NEWCOMB Co.
DEPT. C.E., HATBORO, PENNA.

HAE-RMN-7/61

For more facts, circle No. 362

WISCONSIN tilt trailers



MODEL 1600

no trick ...



... to load heaviest equipment, including rollers, on this Wisconsin trailer. Beaver tail design reduces climb angle to 8°, insures fast, no slip, safe, one-man loading. The rugged, durable, perfectly balanced trailer saves you dollars and man hours. Doubler plates at all critical welds ... exclusive, unbreakable channel mounting ... won't tear away EVER. Boxed tongue assembly permits heavier transfer of load to towing vehicle. Model 1600 (16-ton capacity) only \$2600.00 w/tyres and deck, plus freight and tax.



WISCONSIN TRAILER CO., INC.
RICHFIELD, WIS. Phone HUBERT 10

THE TRAILER THAT SETS THE PACE AND OTHERS IMITATE

For more facts, use Request Card at page 18 and circle No. 363

SEE Sasgen FOR CONTRACTORS DERRICKS • HOISTS • WINCHES



- Easily rigged on the job
- Conservatively rated for safety
- Simple in design, easily maintained.

ROOFERS' CIRCLE SWING DERRICKS 360° operation. 500 to 2500 lb. capacities. Optional type of power. Champion electric shown.

CONTRACTORS' HOISTS Single or double drum types with capacities from 500 to 5500 lb. single line pull. Optional type of power.

Hand-Powered WINCHES

Safe worm or spur gear design. Sizes for 400 to 40,000 lb. load. No. 110 shown.



Write for latest catalog.

Sasgen DERRICK COMPANY
5127 GRAND AVENUE CHICAGO 22, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 364

CONTRACTORS AND ENGINEERS

Product Literature

To obtain free copies of any of the literature described in this section, circle the designated number on the Request Card at page 18.

Material-handling rig—Folder illustrating many applications of the Travellift self-propelled, hydraulic material-handling rig. Illustrated uses include handling of prestressed units in casting yards. Brief specifications of various models.
Write to Travellift, Div. of Drott Mfg. Corp., Dept. C&E, Sturgeon Bay, Wis. No. 81.

Asphalt products—Brochure describing Elastite expansion joint, sealing compounds, vapor stop, and other building and highway products. Advantages claimed; applications; specifications. Form 6481.
Write to Philip Carey Mfg. Co., Dept. C&E, 320 S. Wayne Ave., Cincinnati 15, Ohio. No. 79.

Concrete forms—Catalog explaining the Symons Steel-Ply forming system, with case history uses of the forms. Units are described in detail, and information about form hardware is included.
Write to Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill. No. 95.

Hydraulic cranes—a booklet describing the Grove line of hydraulic cranes for a variety of maintenance and material-handling applications. Photographs show the machines in operation, and operational diagrams and specifications give working capacities.
Write to Grove Mfg. Co., Dept. C&E, Shady Grove, Pa. No. 171.

Template preparations—Reprint of article, "Principles of Template Preparation for the Oxygen Gas Cutting Process." Diagrams; illustrations.
Write to Air Reduction Sales Co., Division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y. No. 71.

Hand compactor—Folder describing the Maxtamp power rammer, an English-built, one-man-operated compactor featuring automatic lubrication and positive carburetion.
Write to Complete Machinery & Equipment Co., Inc., Dept. C&E, 36-40 11th St., Long Island City 6, N. Y. No. 78.

Bonding agent—Descriptive literature on Uniweid, a new agent for waterproof bonding of fresh, wet concrete to cured concrete. Advantages; application instructions.
Write to Permagile Corp. of America, Dept. C&E, 34-43 56th St., Woodside 77, N. Y. No. 86.

Bridge finisher—Bulletin describing the versatility of the Rex concrete-bridge finishing machine. Specifications; optional equipment. Bulletin 61-159P.
Write to Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis. No. 80.

Concrete vibrators—Descriptive sheet on the Models GV and EV

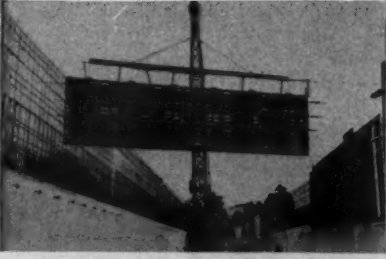
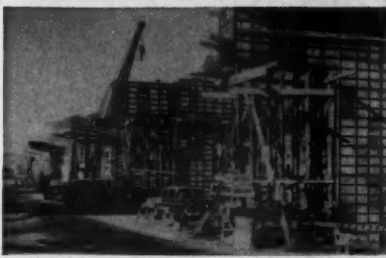
flexible-shaft concrete vibrators. Details on the unit's efficiency and portability; specifications on power units, shaft lengths, and head sizes.
Write to The Prime-Mover Co., Dept. C&E, Highway 22E, Muscatine, Iowa. No. 72.

Core drill—Folder devoted to the new Acker Ambassador core drill, its features, and its specifications. Information on Acker thin-wall diamond bits is included. Bulletin No. 27.
Write to Acker Drill Co., Inc., Dept. C&E, P. O. Box 830, Scranton 2, Pa. No. 104.

Soil compactors—an illustrated folder on the new Master Jumping-Jack compactor for cohesive-type soil

in the open or up close to buildings, and the Models C-12 and C-36 vibratory compactors for granular soil, asphalt, etc. Comparative specifications.
For further information write to Master Vibrator Corp., Dept. C&E, 1752 Stanley Ave., Dayton 1, Ohio. No. 168.

Horizontal shoring—a folder describing the use and capacity of Alcoa-Hico adjustable horizontal shoring. Drawings illustrate installation and stripping. Detail diagrams; carrying-capacity table; etc.
For further information write to Hico Corp. of America, Aluminum Division, Dept. C&E, 120 Broadway, New York 5, N. Y. No. 167.
(Continued on next page)



CONCRETE FORMING PROBLEMS

PROFITABLY SOLVED

BY RENTING UNI-FORM PANELS

Over the years thousands of contractors have rented UNI-FORM Panels to form concrete and save money on almost every conceivable type of job, from house foundations to mammoth industrial projects. Renting UNI-FORM Panels is simple . . . You send us a set of plans and we will send you a rental proposal based on what you would need. You will get a tailor-made forming system delivered to your job. But the big advantage is that you will be able to use a forming system that will out-perform any other method you might use. Write today for the complete story on UNI-FORM Panels or send us a set of plans; either way we will be glad to hear from you.

UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:
ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

For more facts, use Request Card at page 18 and circle No. 366

DUDGEON HYDRAULIC JACKS

**SALES
RENTALS**

FOR:
• PILE TESTING
• UNDER-
PINNING
• BRIDGES
• PIPE
PUSHING
• SOIL TESTING

Write to
Dept. A

**DESIGNERS and
MANUFACTURERS OF
Hydraulic Units
For Special
Applications**

**RICHARD
DUDGEON INC.** EST. 1890

789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

For more facts, circle No. 365

AUGUST, 1961

(Continued from preceding page)

ATTENTION: CONCRETE CONTRACTORS!

Why let green labor cost you money? We can furnish you with TRAINED CONCRETE TECHNICIANS who have had on-the-job experience in PATENT FORMS, (Symons, Gates, Duraform, among others), transit operation, blue print reading, and all other phases of concrete construction. These men are EAGER and AMBITIOUS and looking to the concrete industry for their future. For further information WRITE, CALL OR WIRE:

NATIONAL INSTITUTE OF CONCRETE CONSTRUCTION, INC.
2805 E. Washington Avenue Madison 4, Wisconsin

For more facts, use Request Card at page 18 and circle No. 367

WANTED

KILLER *Clay* COMPACTION JOBS

For Vibratory Sheepfoot Roller

Compaction Time Cut 75% On Earth Fill Dam

Facts don't lie . . . one pass by a Dynapac, four passes for competition to meet specs. Which equipment would you rather have on your job? We're after the killer jobs, the kind where your profits go down the drain due to soil compaction problems. We will run against any compaction equipment. Let the Dynapac CF-30 prove itself on your job. Call your nearest distributor.

DYNAPAC CF-30

PURPOSE OF TEST: Establish compaction specs for new earth fill dam.

AUTHORIZED BY: Municipal Water Co. — tests directed by prominent civil engineering firm.

EQUIPMENT: CF-30 vibratory sheepfoot versus 5 x 5 sheepfoot developing 1100 p.s.i.

LOCATION: Southern California

MATERIAL: Clay with 30% passing at 200 sieve.

RESULTS: 3 to 4 passes with vibratory sheepfoot passed density test. 5 x 5 required 12 to 16 passes.

* Complete details available on request.

Tower cranes—Literature on the Pecco line of tower cranes. Illustrations; specification sheets; job reports.

Write to American Pecco Corp., Dept. C&E, 188 E. Post Road, White Plains, N. Y. No. 109.

Crane-excavator—Bulletin listing 56 improvements in the Model 88-B Series Two crane-excavator, including changes in frame, deck machinery, power units, air controls, crawlers, and front ends.

Write to Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis. No. 75.

Abrasive products—Catalog of abrasive belts, rolls, sheets, disks, and other products.

Write to Carborundum Co., Dept. C&E, P. O. Box 337, Niagara Falls, N. Y. No. 106.

Electric chain hoists—a new booklet, "Standard Specifications for Electric Chain Hoists," discussing terminology, components, capacities, etc. Contains a valuable list of points about which the purchaser of an electric chain hoist needs specific information. Booklet HMA-400.

For further information write to Hoist Manufacturers Association, Inc., Dept. C&E, 1 Thomas Circle, Washington 5, D. C. No. 108.

Asphalt cutter—Descriptive literature on the company's line of asphalt cutters, including information about models for attaching to various construction rigs.

Write to Specialty Mfg., Inc., Dept. C&E, 4950 E. 70th Ave., Denver 1, Colo. No. 105.

Clamshell buckets—Catalog describing Erie line of clamshell buckets, grabs, and grapples. Data on how to choose proper bucket; tables of material weights and crane sizes. Bulletin No. 2L-60.

Write to Erie Strayer Co., Dept. C&E, P. O. Box 1031, Erie, Pa. No. 81.

Equipment trailers—Illustrated folder describing Martin folding-gooseneck lightweight trailers. Construction features; capacities.

Write to Martin Trailer Div., Hyler Co., Dept. C&E, Kewanee, Ill. No. 71.

Backing agent—Brochure describing Nordbak non-metallic backing agent for cone and gyratory crushers and other machinery where such an agent is required. Applications; table of crusher requirements.

Write to Nordberg Mfg. Co., Dept. C&E, 3073 S. Chase Ave., Milwaukee, Wis. No. 83.

Crushing plants—Catalog describing 18 different models of portable jaw-crusher primary plants. Flow diagrams; basic specifications; field photographs. Bulletin 697.

Write to Pioneer Engineering, Division of Poor & Co., Inc., Dept. C&E, 3200 Como Ave. S. E., Minneapolis 14, Minn. No. 73.

Spreader—Brochure describing the Flaherty Spread-Master and its use in applying aggregate chips or highway seal coating. Photographs; drawings.

Write to Flaherty Mfg., Inc., Buffalo-Springfield Co., Dept. C&E, Pocatello, Idaho. No. 93.

Dragline buckets—Brochure covering Page Automatic dragline buckets in the 4 to 7-cubic-yard range. Outstanding features claimed for the line are described.

Write to Page Engineering Co., Dept. C&E, Clearing Post Office, Chicago 38, Ill. No. 104.

Vibratory compactors—Folder illustrating and describing the Vibro-Twin pull model and the Vibro-Tandem self-propelled model vibratory compactors. Specifications. Bulletin VR-1.

Write to Aeroll Products Co., Inc., Dept. C&E, 69 Wesley St., South Hackensack, N. J. No. 72.

Diamond blades—Descriptive sheet on Di-namic diamond blades for masonry and concrete cutting. Various types of blades and their features are described.

Write to Victor, Inc., Dept. C&E, Paoli, Pa. No. 84.

Epoxy resin—Data sheets giving product description, application instructions, and prices for Topkote LP epoxy resin formulations for maintenance and repair of highways, bridges, buildings, etc.

Write to Topkote Products, Dept. C&E, 645 Custer Ave., Evanston, Ill. No. 113.

Welding machines—Bulletin setting forth construction details and performance features of the Idealarc line of dc arc welders. Illustrations; specifications. Bulletin 4609.1.

Write to Lincoln Electric Co., Dept. C&E, P. O. Box 3115, Cleveland 11, Ohio. No. 103.

Belt Morgen belt com and other graphs; Write C&E, P.

Earth Fold-out scribin; Write Dept. C&E, 38, Ill.

Galva booklet o attributes for highwings, and Write vanizers 5325 Mar 10, D

Why? Impact Penetr Dielec All Da (same fatigue weight Headb Brim a GenTe

VIBRO-PLUS PRODUCTS, Inc.
STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.
For more facts, use Request Card at page 18 and circle No. 368

Belt conveyor—Folder describing Morgen hydraulic-drive, portable belt conveyors for handling concrete and other building materials. Photographs; specifications; testimonials. Write to Morgen Mfg. Co., Dept. C&E, P. O. Box 159, Yankton, S. Dak. No. 114.

Earthmoving, rock trailers—Fold-out brochure illustrating and describing six new Athey hauling units. Write to Athey Products Corp., Dept. C&E, 5631 W. 65 St., Chicago, 38, Ill. No. 74.

Galvanized steel—Illustrated booklet on the uses of and advantages attributed to hot-dip galvanized steel for highway guard rails, bridge railings, and lighting standards. Write to American Hot-Dip Galvanizers Assoc., Inc., Dept. C&E, 5225 Manning Place N. W., Washington 16, D. C. No. 92.

Air compressors—Catalog picturing and giving specifications for more than 200 models of stationary air compressors. Catalog No. 20. Write to Lincoln Engineering Co., Dept. C&E, 4010 Goodfellow Blvd., St. Louis 20, Mo. No. 102.

Gradation equipment—Bulletin describing Testlab equipment for running sieve analyses of aggregate, sand, and other granular materials. Write to Testlab Corp., Dept. C&E, 3398 N. Milwaukee Ave., Chicago 41, Ill. No. 100.

Giant truck crane—a 12-page technical portfolio describing features and capacity of the P&H Model 890-TC truck crane, said to be the world's largest. For further information write to Harnischfeger Corp., Construction and Mining Division, Dept. C&E, 4445 W. National Ave., Milwaukee 46, Wis. No. 170.

Plastic pipe—Brochure describing J-M Supreme plastic pipe. Tables; illustrations; recommended installation procedure. Bulletin TR-270A. Write to Johns-Manville Corp., Dept. C&E, 22 E. 40th St., New York 16, N. Y. No. 107.

Highway signing—Booklet discussing criteria for determining proper highway sign lighting, with sketches and photographs of typical GE Fluoroflood fixture installation. Bulletin No. OLP-1023. Write to General Electric, Dept. C&E, Schenectady 5, N. Y. No. 110.

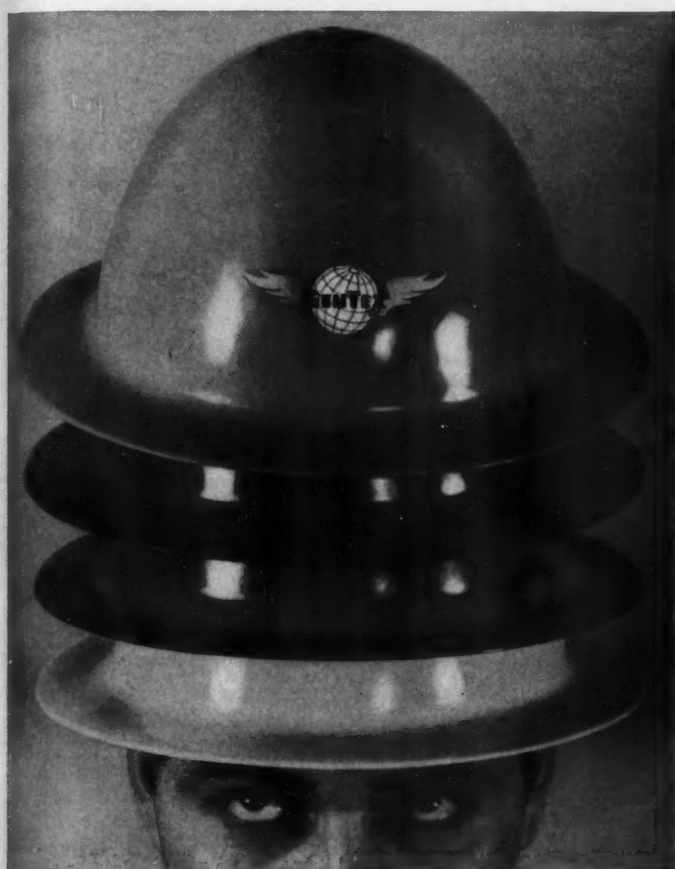
Drilling rigs—Bulletins describing the Le Roi Models LRD-3 100-foot-capacity and LRD-2 30-foot-capacity blast-hole drilling rigs. Illustrations; complete specifications. Write to Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, Sidney, Ohio. No. 89.

Pusher plate—Folder describing construction and operation of the Pushin'-Cushin', a hydraulic shock-absorbing pusher plate for use in tractor-scraper operations. Write to LFM Mfg. Co., subsidiary of Rockwell Mfg. Co., Dept. C&E, Atchison, Kans. No. 87.

Improved tractor models—Booklet describing and illustrating improvements in the D7 and D8 crawler tractors. Reports on how these improved models result in greater profits for owners. Booklet D110. Write to Caterpillar Tractor Co., Dept. C&E, Peoria, Ill. No. 70.

Tractor shovel—Specification bulletin listing features said to result in fast, economical operation of the Trojan Model 114 tractor shovel. Complete specifications; listing of

(Continued on next page)



**wearing a GenTex
is like
wearing 4 hats!**

Why? Because just one GenTex Safety Hat is built to give:

- Impact Resistance**—protection at better than 40 foot-pounds.
- Penetration Resistance**—less than 1/4" penetration.
- Dielectric Resistance**—shock protection up to 25,000 volts.
- All Day Comfort**—headband has 6 point suspension system (same principle in Jet Pilot helmets), ends quitting time fatigue. Choose from 9 colors impregnated right in the lightweight shell for good looks and instant job classification. Headband snaps in, has fingertip control and is fully washable. Brim and peaked cap models. For full particulars write the GenTex Corporation, 450 7th Avenue, New York 1.

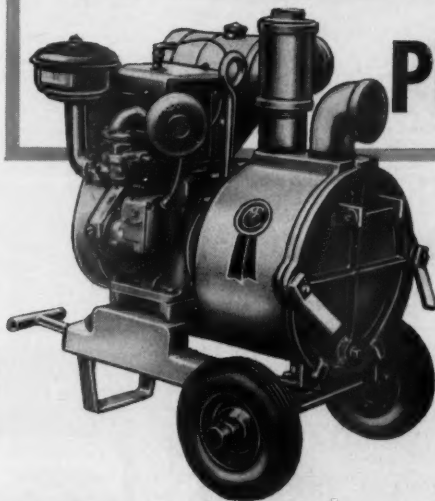
GENTEX SAFETY HATS
another quality product
by the GenTex Corporation

For more facts, use Request Card at page 18 and circle No. 369

**Handles 20,000 G.P.H.
of trashiest water ...
EVEN WITH UP TO**

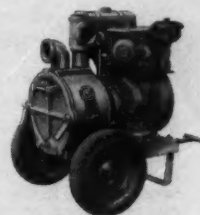


NEW CMC 3" TrashMaster PUMPS



- **AMAZING "EASY-OPEN" HATCH** — REMOVE OBSTRUCTIONS WITHOUT DISCONNECTING HOSE. Simply remove 2 wing nuts—lift off cover.
- **AUTOMATIC SELF-PRIMING WITHOUT CHECK VALVE.**
- **PRIMES AT 25 FEET SUCTION LIFT IN 45 SECONDS.**
- **REMOVABLE VOLUTE AND IMPELLER...EASILY TAKEN OUT AND REPLACED IN MINUTES.**

● The ultimate in extra rugged, big capacity trash pump design. CMC TrashMasters handle toughest dewatering and sewage jobs WITH EASE! Keep going where ordinary pumps quickly plug up and bog down. Will move up to 20,000 gallons of trashiest, meanest-to-handle water every hour ... water loaded with wood chips, muck, clumps of waste, sand, etc. Prime extra fast. Exclusive "easy-open" hatch makes big obstructions no problem. 3" TrashMaster comes in 2 models: Model 3T-9 with 9 H.P. air-cooled engine (shown above) ... and Model 3T-12 with 12 H.P. air-cooled engine (shown at right).



NEW FREE CATALOG...mail coupon

**CONSTRUCTION
MACHINERY CO.**



WATERLOO, IOWA

Rush complete details, including new, free catalog, on the NEW CMC 3" TRASHMASTER PUMPS.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

For more facts, use coupon or Request Card at page 18 and circle No. 370



Against a backdrop of tall spires, five pile-driving rigs work on the foundation for a new wharf on the river Elbe at Hamburg, Germany's largest city after Berlin. Although 65 miles from the North Sea, it is a leading seaport, exceeded in size only by London and Rotterdam in Europe. This is one of the few remaining pier areas not yet rebuilt since the war.



Along Schloss Strasse in Koblenz, West Germany, a new commercial building (stores with apartments) gets under way. Pedestrians at the fenced site are not sidewalk superintendents; they are reading the front page of the daily newspaper that was just posted along the enclosure.



Harbormaster Marine Tractor

COMPLETE, POWER and STEERING in ONE PACKAGE

Harbormaster Marine Tractor Outboard Propulsion and Steering gives your craft rugged power, plus complete 360° maneuverability and the advantages of quick installation, operation and maintenance.

Harbormasters are complete units, easily installed for immediate use. They are ideal in shallow or deep water . . . for coastwise service as well as in harbors, lakes, canals, and rivers. Available with direct or remote controls.

Harbormasters have been proved in hundreds of installations. Send for your copy of big, free catalog which gives complete details.

MURRAY & TREGURTHA, INC.
44 Hancock Street • Quincy 71, Massachusetts

For more facts, use Request Card at page 18 and circle No. 371

Product Literature

(Continued from preceding page)

standard and optional equipment.

Write to Yale & Towne Mfg. Co., Trojan Div., Dept. C&E, Batavia, N. Y. No. 76.

Stud driving—Guide to selection of Remington studs and power loads recommended for many applications of the Remington stud driver fastening method. Power-Mate drivers are described.

Write to Remington Arms Co., Inc., Dept. C&E, Bridgeport 2, Conn. No. 97.

Welding-cable fitting—Literature describing the Tweco ball-point, quick-detachable connector for welding cable. Types are illustrated, and specifications and prices given. Bulletin 124-BP.

Write to Tweco Products, Inc., Dept. C&E, P. O. Box 666, Wichita 1, Kans. No. 94.

Rock drills—Booklet showing how contractors can assemble special drilling rigs, using Ingersoll-Rand components, to meet particular needs. On-the-job photographs of special rigs. Form 4215.

Write Ingersoll-Rand Co., Dept. C&E, 11 Broadway, New York 4, N. Y. No. 96.



ROAD SHOULDER SPREADER

Model 605 Power-Pack truck-drawn spreader places up to 6 ft. of material in one smooth, clean, uniform pass . . . quick cable hook-up for any size truck or trailer . . . capacity up to 4 yds. per minute depending on material . . . moved easily from job to job without trailer equipment.

See your dealer or write for details now!

POWER-PACK CONVEYOR CO.

836 E. 140th St. - Glenview 1-7670 - CLEVELAND 10, OHIO

For more facts, use Request Card at page 18 and circle No. 374

REMOVE SNOW FASTER • EASIER • LESS COST

MONARCH

Monarch Power Hydraulic Controls

Get the jump on winter—get set now for faster snow removal with Monarch Power Hydraulic controls! With Monarch, lift and lower your snow plow right from the cab . . . automatically. Instant up-and-down action with the flick of the wrist. A Monarch control is quickly installed. See your dealer or write for illustrated folder.

DYNA-MIGHT Battery-Operated

HY-LO-JACK HY-LO for Jeep Fan Belt Driven

MONARCH ROAD MACHINERY COMPANY
1000 Main St., N.E., Grand Rapids, Mich. 49503

For more facts, use Request Card at page 18 and circle No. 372

Attention CONTRACTORS

The Greer School will train your men to operate or service all types of heavy equipment. Training conducted on hundreds of acres of land set aside for this purpose to simulate actual operating conditions. Our placement department can also provide men you need. Write for information and tuition rates.

MECHANICS training

The Greer heavy equipment training shops provide highly practical instruction covering every step in maintenance and service of all types of current equipment. Training includes gasoline and diesel engine work and hydraulic systems. Students work on actual equipment in addition to classroom training.

OPERATORS training

Greer heavy equipment operator course graduates are ready to step into any job in the field. Practical classroom training on theory and operation is supplemented with hundreds of hours of operating every type of road building, earth moving and construction equipment.

For information write to Registrar
EARTH MOVING DIVISION

Greer TECHNICAL INSTITUTE
Dept. EH, Box 278, Braidwood, Ill.

For more facts, use Request Card at page 18 and circle No. 373

"people on the go know the HENRY HUDSON HOTEL"

Whether you're from Singapore, Bangkok, Cadiz or Hometown, USA, arriving by jet, boat, rail or horseless carriage, you'll enjoy the fine accommodations of the Henry Hudson—headquarters of world travelers.

1000 rooms - 1200 baths
Swimming Pool
VOYAGER ROOM - Continuous Entertainment Nightly Except Sunday

THE CHART ROOM
Restaurant and Cocktail Bar
Singles from \$7
Doubles from \$12

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ENGINEER

COMMENT from the BUTLER ENGINEER

This You'll Want to See

By the time you read this there'll be a Butler *Central Mix Plant* pouring a Niagara of concrete for a highway project near O'Hare Field in northern Illinois.

Project and Plant are big—big as hell. But the reason you'll want to see it for yourself is because of its production speed AND MOBILITY. Each section travels on its own wheels and it's engineered to dismantle, move and RE-ERECT in a hurry.

In other words, here's a King-Size *Central Mix Plant* with the portability of a highway batching plant . . . Just as the BUTLER TX-4 Roadbuilders Plant has set one world's record after another for production, this new *Central Mix Plant* will pour quality controlled concrete at record speeds.

Just how they've heard of it, we're not sure, but contractors from all over the country have called to say, "Let me know when it's operating. I want to see it."

And you will too!

Another thing: a plant of this size and potential production capacity speaks eloquently for a carefully considered confidence in a very bright and profitable business future.

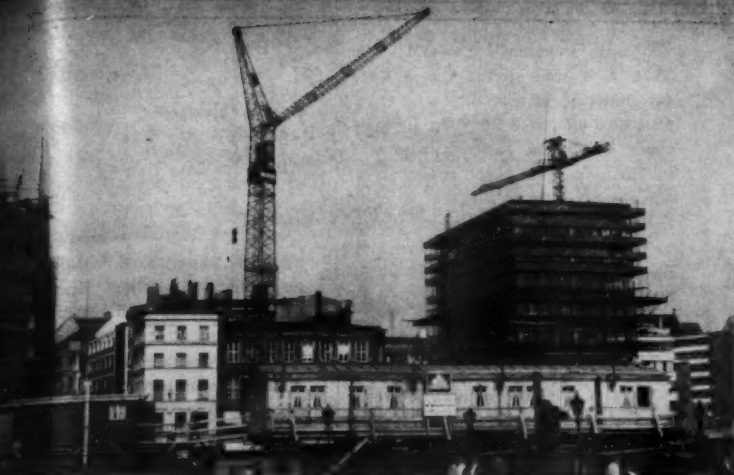
We wrote some time ago about the Blue River Tunnel, 23.7 miles long—a great engineering feat. Now we learn that the Butler Plant used for lining the tunnel has been working continuously 24 hours a day, 7 days a week with no downtime for maintenance.

Everybody's happy about it, including

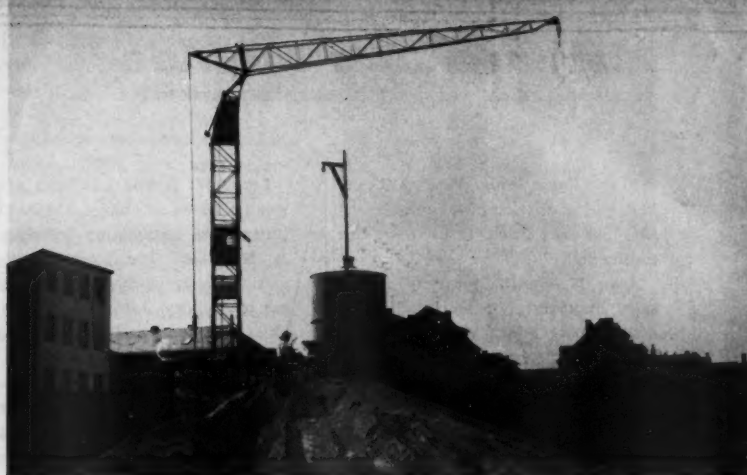
The Butler Engineer
BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

For more facts, circle No. 375

AUGUST, 1961



During World War II, 300,000 of the 560,000 buildings in Hamburg were destroyed. Most of these have now been replaced or rebuilt. A reconstruction job is in progress on the building at the left. Behind the contractor's field office, center, a tower crane is getting started on a new structure; work on the building at right is well along.



Along the Rhine waterfront, Koblenz is acquiring a new hotel. Here the familiar tower crane is preparing to place concrete for foundation footings. Cement silos and aggregate stockpiles for job-mixed concrete are located right at the site. The firm of Mogendorf & Segner is the contractor.

Product Literature

Cableway equipment—General folder covering the Sauerman line of DragScraper and slackline cableway machines, Crescent buckets, and wire rope fittings and Duro-lite blocks. Photographs; drawings.

Write to Sauerman Brothers, Inc., Dept. C&E, 624 S. 28th Ave., Bellwood, Ill. No. 85.

Form ties—Data sheets on new strap, loop, and wire ties added to the company's line of concrete-forming accessories.

Write to Dayton Sure Grip & Shore Co., Dept. C&E, Kercher St., Miamisburg, Ohio. No. 88.

Air gun—Illustrated folder describing uses of the Von Arx air gun for de-rusting, de-scaling, and other maintenance cleaning. Specifications.

Write to Marindus Co., Dept. C&E, P. O. Box 286, Woodcliff Station, North Bergen, N. J. No. 112.

Lined, coated pipe—Technical bulletin covering federal specifications relating to Steelcor Cemcote, a cement-mortar-lined and reinforced cement-mortar-coated steel pipe. Bulletin 100.

Write to Southern Pipe, division of U. S. Industries, Inc., Dept. C&E, P. O. Box C, Azusa, Calif. No. 91.



MUCH BETTER THAN METAL VENT PIPE

because it's made of
NEOLON

NEOPRENE
COATED NYLON

- Lower cost per foot.
- Can't tear — tough, wear-resistant — mildew proof — bright yellow for high visibility.
- Weighs only a fraction of metal pipe — will not rust or dent like metal pipe.
- One man can install — easy to hang and couple — takes only 3% storage area of metal pipe.
- Ideal for Mainline ventilation — brings air supply to working face. Lasts indefinitely.
- 8" to 36" diameter — all standard lengths. Also wire reinforced tubing for pulling out foul air.

Send for Catalog 109

**AMERICAN
BRATTICE CLOTH CORP.**
233 King's Hy., Warsaw, Indiana

For more facts, circle No. 376



Crane-Truck Engine—Waukesha
145-GZ (gasoline), six cylinders,
5½-in. x 6-in., 817 cu. in. displ.

15,000 MILES
AN HOUR
But first...
WAUKESHA
power

Travel speed—more than 15,000 miles an hour for 6,000 miles plus. Instantly launched from underground silos, Minuteman missiles are awesome defensive weapons. But construction comes first. Building this Minuteman missile complex in central Montana—a \$62-million contract, and a two-year job—is under way. *Waukeshas* are at work—powering the several P&H model 565 truck cranes. They're building 15 launch control centers; and 150 hardened underground missile silos, 84 ft. deep with 12 ft. bottom diameter. Shown is one of these cranes with 40 ft. booms and 1¼-yd. clam buckets, excavating shot rock from the silos. Silos are usually excavated to a 50-ft. depth below cranes' working level. Because of size and looseness of shot rock, excavation rates vary. One crane handled six 10-yd. truck loads an hour. That shows the *dependability* of *Waukesha* power. Each crane has two gasoline *Waukeshas*: a 140-GZ powers the boom; a 145-GZ the truck. Other models for cranes or shovels, up to 1200 hp, Diesel or gasoline. Send for descriptive bulletins.

521-B

WAUKESHA MOTOR COMPANY • WAUKESHA, WISCONSIN
NEW YORK TULSA HUNTINGTON PARK, CALIF.

Factories: Waukesha, Wisconsin; Clinton, Iowa; Houston, Texas

For more facts, use Request Card at page 18 and circle No. 377

Manufacturer Memos

Smith Engineering Works, Milwaukee, Wis., a division of Barber-Greene Co., has appointed three new vice presidents.

Jake H. Smith, formerly export sales manager, becomes vice president, export sales; **William F. McConnell**, formerly domestic sales manager, becomes vice president, domestic sales; and **Frank M. Allen**, previously works manager, is now vice president, works manager.

John F. Vogel, former assistant secretary of Smith, is now assistant secretary and assistant treasurer of Barber-Greene.

Leroy W. Janson has been named vice president in charge of manufacturing and engineering for **Sprague & Henwood, Inc.**, Scranton, Pa., manufacturer of diamond-core drilling machinery. Janson was formerly chief engineer and plant manager for the company.

Edward E. Brush is the new executive vice president of **Soiltest, Inc.**, Chicago, Ill., a subsidiary of Cenco Instruments Corp. He was formerly vice president-sales for Soiltest, which manufactures apparatus for engineering testing.

Chicago Pneumatic Tool Co., New York, N. Y., has elected **Guy J. Coffey** chairman of the board and chief executive officer of the firm. He succeeds **H. Arnold Jackson**, who will continue as director and chairman of the executive committee.

Norman Readman succeeds Coffey as president of the firm. He formerly served as managing director of all of the company's overseas operations.

Thomas F. Noonan was elected vice president and controller. He has been controller for the past two years.

Carra L. Lane is the new vice president and manager of plant operations.

Acme-Hamilton Mfg. Corp., New York, N. Y., industrial rubber manufacturing firm, has elected **William Wade** a vice president and technical director.

Wade has been with the company since 1954. Prior to that he was with the technical department of the U. S. Rubber Co. **Samuel Resnic** has been elected a director of the corporation.

The **LeTourneau-Westinghouse Co.**, Peoria, Ill., has named **Lewis J. Burger** president.

Burger was previously with the General Electric Co., serving consecutively as general manager of the Gear Motor and Transmission Com-

Lewis J. Burger, president of LeTourneau-Westinghouse Co.



ponents Department, Gas Turbine Department, Switchgear and Control Division, and laboratory operations of the Component Products Division. In his new position, he succeeds **Merck R. Yontz**, who has resigned.

Kenneth R. Geist is the general manager of the newly formed special-products department, **Allis-Chalmers Mfg. Co.**, Milwaukee, Wis. He will be responsible for the development of new business for the company. Prior to his new appointment, he was A-C's director of purchases. Geist's former post is assumed by **Fred J. MacDougall**.

H. T. Larmore is the new assistant general manager of A-C's Construction Machinery Division. He was previously general products manager of the division.

George E. Hall has been named to the newly created post of manager, sales development, for the Construction Machinery Division. He was formerly manager of the division's eastern region.

Where SPECIFICATIONS call for

HIGH DEGREE
SOIL
COMPACTION



BARCO RAMMERS are THE ANSWER!

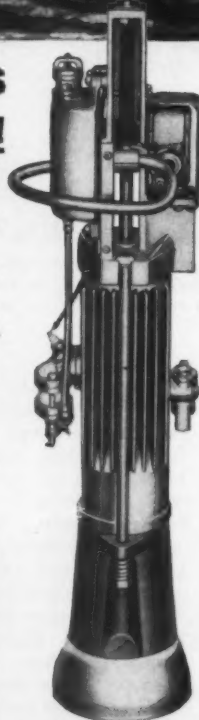
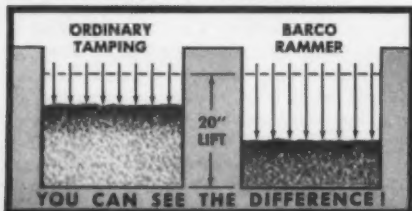
YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write.

SEND FOR A COPY OF CATALOG 621.



Sold and Serviced by the Nation's Leading Distributors

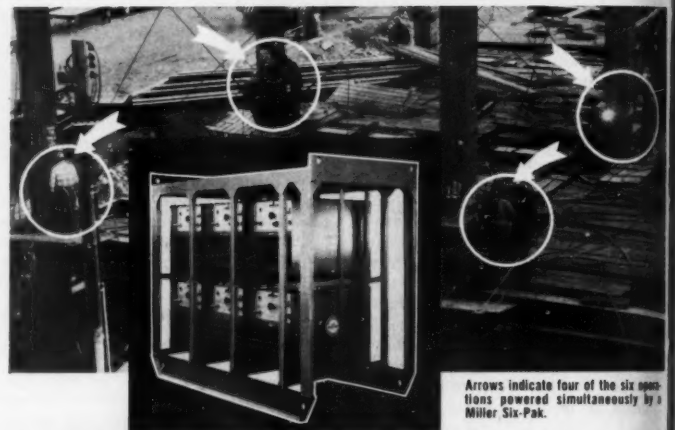
BARCO MANUFACTURING CO.

518J Hough Street • Barrington, Illinois

BARCO RAMMER for High Degree Soil Compaction



For more facts, use Request Card at page 18 and circle No. 378



YOU GET MORE WITH A miller

And more and more engineers know it. Miller's latest development for the industry is the above Six-Pak comprised of six Gold Star SRH-444 rectifier type dc welders. Featuring the exclusive Miller rectifier, these weld stations will probably revolutionize parts of the building industry as their speed, versatility, and economy open new possibilities never feasible with motor generator set-up. Frame is built to construction trade standards and there's a choice of 200, 300 or 400 ampere welders in either the Six-Pak as shown or the Three-Pak.

A full and detailed description will be sent upon request. Also available free is a new pamphlet "Rectifiers For Welding."

miller ELECTRIC MANUFACTURING COMPANY, APPLETON, WISCONSIN
Distributed in Canada by Canadian Liquid Air Co., Ltd. Montreal

For more facts, use Request Card at page 18 and circle No. 379

CONTRACTORS AND ENGINEERS

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AUGUST, 196

Koehring Co., Milwaukee, Wis., has made major personnel changes in two of its divisions.

David W. Marchant has been promoted from president and general manager of Koehring-Waterous, Ltd., Brantford, Ont., to president and general manager of Koehring Division, Milwaukee.

Kensal R. Chandler has been appointed president and general manager of Koehring-Waterous. He was formerly assistant vice president of sales, Koehring Division.

Clark Equipment International, C. A., wholly-owned overseas subsidiary of Clark Equipment Co., Buchanan, Mich., has elected J. Frederick Bechtel executive vice president and general manager. He is a director

of Clark Equipment International, C. A., Clark Equipment Credit Corp., and Canadian Clark, Ltd.

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed William B. Winter manager of production planning and control. He previously served as general foreman, plate and weld.

Roger G. DeLong has been elected to the board of directors of the Twin Disc Clutch Co., Racine, Wis. He is vice president and assistant general manager of the company.

William T. Davis is the new supervisor of manufacturing engineering for Air Reduction Sales Co.'s cryogenic engineering department in Plainfield, N. J. He will be in charge

of the fabrication of cryogenic equipment for all of Airco's major air-separation and related cryogenic plants.

He formerly served in Airco's eastern regional office as a regional engineer.

The Waukesha Motor Co., Waukesha, Wis., has named A. Foster Sheller vice president of manufacturing. He has been manufacturing manager since 1959.

F. C. Schulze has been appointed vice president of sales. Since 1949, he has been in the post of general sales manager.

J. G. Swain, vice president of Waukesha for the past 12 years, has announced his retirement. He will continue to serve as a member of the



F. C. Schulze, vice president of sales, and A. Foster Sheller, vice president of manufacturing, Waukesha Motor Co.

firm's board of directors.

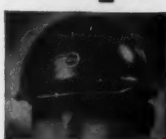
Waukesha has named Robert A. D'Amour manager of manufacturer sales and Roland R. Heideman manager of distributor sales.

D'Amour was formerly assistant sales manager. Heideman was assistant manager of the company's California branch.

6 Jackson Safety Hats & Caps



FIBER GLASS hats (left) and caps are compression molded with polyester resins. They exceed Federal specifications. Eight colors.



ALUMINUM hats and caps are light and strong, pass Federal specifications for impact and penetration resistance. Polyethylene fixed-safety-margin headgears are easy to adjust and clean. Eight colors.



DIELECTRIC plastic hats and caps pass Edison Institute specifications for electrical resistance and Federal specifications for construction workers. Polyethylene headgear. Four colors.



FREE CATALOG!
Sixteen page welding and safety equipment catalog—Write today!



Jackson Products

31739 Mound Road, Warren, Michigan

For more facts, use Request Card at page 18 and circle No. 380



MARION HOPPER TRAILERS

OHIO FIRM USES MODERN MARION HOPPERS TO MOVE BIG TONNAGES

Nine hours a day—five days a week, three Marion Hopper Trailers haul tons of material from pit to tipple for American Aggregates Corp. of Greenville, Ohio.

They have performed this heavy chore with "very little trouble. And that's saying quite a bit, because they are really put to the test every day," says Plant Manager Leo Hinders.

Since purchasing their first Marion in 1953, American Aggregates have added two more, one in 1955 and their third in 1960. This confidence in Marion Hoppers can only come from dependable on-the-job performance witnessed by men responsible for running their business at a profit.

If you're in need of the kind of outstanding hauling performance taking place at American Aggregates, call your nearby Marion Distributor or, write direct for all the details on Hoppers and the complete Marion line.

MARION METAL PRODUCTS CO., Marion, Ohio, U.S.A.

New Ellis SLIP-IN SHORE HOLDER For 2"x__" Purlins



Using 4 x 4 Shores with 2 x 8, 2 x 10 or 2 x 12 Purlins

Contractors who prefer "two-by" purlins for load-carrying and spanning ability will find the new Ellis "Two-by" Slip-In Shore Holder made to order for their needs. It fits purlins made out of 2 x 8 up to 2 x 12 material and an Ellis 4 x 4 Shore can be slipped in quickly. Write today for details.

Ellis MFG. CO. INCORPORATED
211 N. W. 4th St. OKLAHOMA CITY, OKLA.

For more facts, use Request Card at page 18 and circle No. 381

BODIES AND HOISTS

MARION

For more facts, use Request Card at page 18 and circle No. 382

Product literature in August advertisements

The following free catalogs, bulletins, and other specific literature are offered by manufacturers advertising in this issue and whose advertisements were in our hands by July 15. To obtain any item, circle the designated number on the Request Card at page 18.

Lube equipment—Graco Idea Book describes and illustrates typical equipment arrangements; gives specifications for lubricating equipment; explains how to job-plan your lube truck. Circle No. 152 on Request Card.

Structural-steel accessories—Catalog on the Sylgab line of steel and wire accessories for fireproofing of structural steel. Circle No. 130 on Request Card.

Sump pumps—Bulletins describing the Gardner-Denver line of pneumatic sump pumps for various dewatering jobs and other applications. Circle No. 151 on Request Card.

Concrete cart—Literature illustrating production performance of the Model M-15B Prime-Mover, said to place 12 to 17 cubic yards of concrete per hour. Circle No. 131 on Request Card.

Equipment trailers—Fruehauf's 1961 folder describing its complete line of trailers, including bulk-cement tanks and dump units. Circle No. 164 on Request Card.

Tampers—Bulletin No. 610-10 on the Stow Model T-18A hand-operated tamping machine for compacting earth, blacktop surfaces, etc. Circle No. 153 on Request Card bound in at page 18.

Trencher—Booklet on the Parsons 77 Trenchliner offering a choice of 32 digging selections for lighter ditching or trenching. Circle No. 146 on Request Card.

Wire rope—Booklet describing the advantages and the uses of Roebling Royal Blue wire rope. Circle No. 149 on Request Card.

Batch controller units—Booklet on Johnson concrete-batch controller-recorder units for single-material and multiple-aggregate batchers. Circle No. 141 on Request Card bound in at page 18.

Concrete-placing rigs—Brochure describing the Airplaco line of concrete-placing machinery. Circle No. 158 on Request Card that is bound in at page 18.

(Continued on page 116)

BIGGER PROFITS WITH RYAN'S CABLE LAYERS & REEL TRAILERS JOB PROVEN TWELVE YEARS lowest first cost & lowest operating cost

STORM PROOF YOUR OUTSIDE UTILITY PLANT



For BEAUTY in lawns & parkways
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Hour meters—Catalog No. 600 illustrating the Hobbs line of industrial hour meters and other electrical timing instruments for use with construction machinery. Circle No. 129 on Request Card.

Welding, safety gear—Catalog illustrating and describing the Jackson line of welding and safety equipment. Circle No. 144 on Request Card.

Ditchers—Descriptive information and prices on the Vermeer line of self-propelled Pow-R-Ditchers, and on the Vermeer hydraulic backfiller. Circle No. 142 on Request Card.

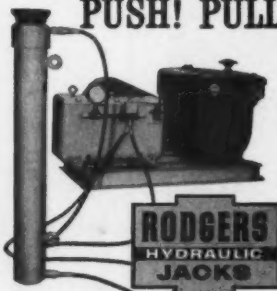
Form accessories—Catalog describing the complete line of Sure-Grip accessories for concrete forming. Circle No. 143 on Request Card.

Megaphone—Catalog with prices on the Audio transistor-powered Hailer for use in directing construction crews. Circle No. 147 on Request Card.

Sandblast machine—Descriptive bulletin on Ruemelin portable and stationary sandblast machines for removing rust, paint, and scale. Circle No. 132 on Request Card.

Lubricants—"Lubriplate Data Book" on the lubrication needs of construction machinery and recommended practices. Lubriplate Division, Fiske Bros. Refining Co. Circle No. 148 on Request Card.

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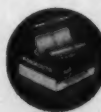
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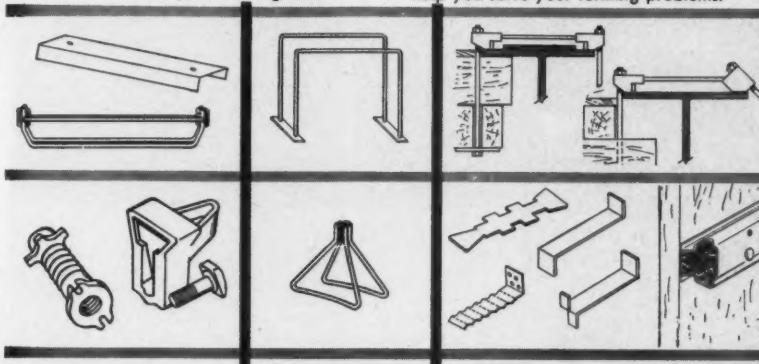
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Product Literature in August Advertisements

(Continued from page 114)

Castings—Catalog illustrating or listing some 15,000 patterns for gray and ductile iron castings. Neenah Foundry Co. Circle No. 145 on Request Card.

Trench drills—Bulletin giving complete facts on Salem trench drills for horizontal drilling. Circle No. 150 on Request Card.

Aggregate dryers—Pamphlet illustrating and describing the Tarco Model AD9 and Model AD7 aggregate dryers. Tarrant Mfg. Co. Circle No. 154 on Request Card.

Engine rebuilding—Booklet and price list on the Swick-Guth process of rebuilding cylinder heads, blocks, and transmission cases. Circle No. 155 on Request Card.

Tunnel tubing—Catalog No. 109 describing the features and uses of

American Brattice neoprene-coated nylon tubing for tunnel ventilation; also wire-reinforced tubing. Circle No. 160 on Request Card that is bound in at page 18.

Hauling units—Literature on Gar Wood's Mono-Shell hopper trailers for on and off-highway work. Circle No. 137 on Request Card.

Marine tractor—Catalog describing Harbormaster marine-tractor outboard units for contractors' use in harbors, lakes, canals, and rivers. Murray & Tregurtha. Circle No. 133 on Request Card.

Concrete vibrators—Brochure describing the complete line of Dart concrete vibrators. Circle No. 162 on Request Card.

Hose, protective clothing—Catalog presenting the Continental line of suction hose and other products, including workmen's protective cloth-

ing. Circle No. 134 on Request Card at page 18.

Derricks, hoists, winches—Latest catalog on the Sasgen line of contractors' derricks, hoists, and hand-powered winches. Circle No. 135 on Request Card.

Trash pumps—Catalog containing details of the new CMC 3-inch TrashMaster pumps for tough dewatering jobs. Construction Machinery Co. Circle No. 163 on Request Card.

Differentials—Descriptive literature 862A on Detroit Automotive's line of NoSpin differentials for heavy-construction machinery. Circle No. 159 on Request Card.

Form hardware—Bulletin SA-1 describing the Superior Supertie assembly system for tying concrete forms. Circle No. 149 on Request Card.

Soil compactors—Catalog No. 821 illustrating and describing one-man-operated Barco Rammers for high-degree soil compaction. Circle No. 161 on Request Card.

Engines—Descriptive bulletins on the Waukesha line of power units, both gasoline and diesel, for construction machinery. Circle No. 165 on Request Card.

Engine parts kits—Form S-280, a parts bulletin describing the available line of kits containing parts for Wisconsin engines. Circle No. 136 on Request Card.

Pumps—Descriptive literature on the Barnes new SPC line of contractors' pumps, including specifications and performance data. Circle No. 138 on Request Card.

Contractors' hoists—Bulletin 34 describing the Clyde line of portable construction hoists. Both large and small units are discussed. Circle No. 139 on Request Card.

Snowplow hydraulic controls—Illustrated folder describing units in the Monarch line of power hydraulic controls for snowplows. Circle No. 157 on Request Card.

Pipe, couplings—Bulletin No. 59 describing Naylor Spiralweld pipe and Wedgelock couplings for air, water, or ventilating lines. Circle No. 156 on Request Card.

Welding rectifiers—Pamphlet, "Rectifiers for Welding," describing the application of various Miller Electric units for multipurpose welding. Circle No. 166 on Request Card.

Prestress division becomes corporation

■ A new corporation known as PCD Equipment Corp. has been formed and will continue to distribute prestressing material and equipment formerly handled by the Prestressed Concrete Division of Intercontinental Equipment Co., Inc., New York, N. Y.

A. F. DiStasio, former manager of the division, will be president of the new corporation.

For more facts, use Request Card at page 18 and circle No. 391

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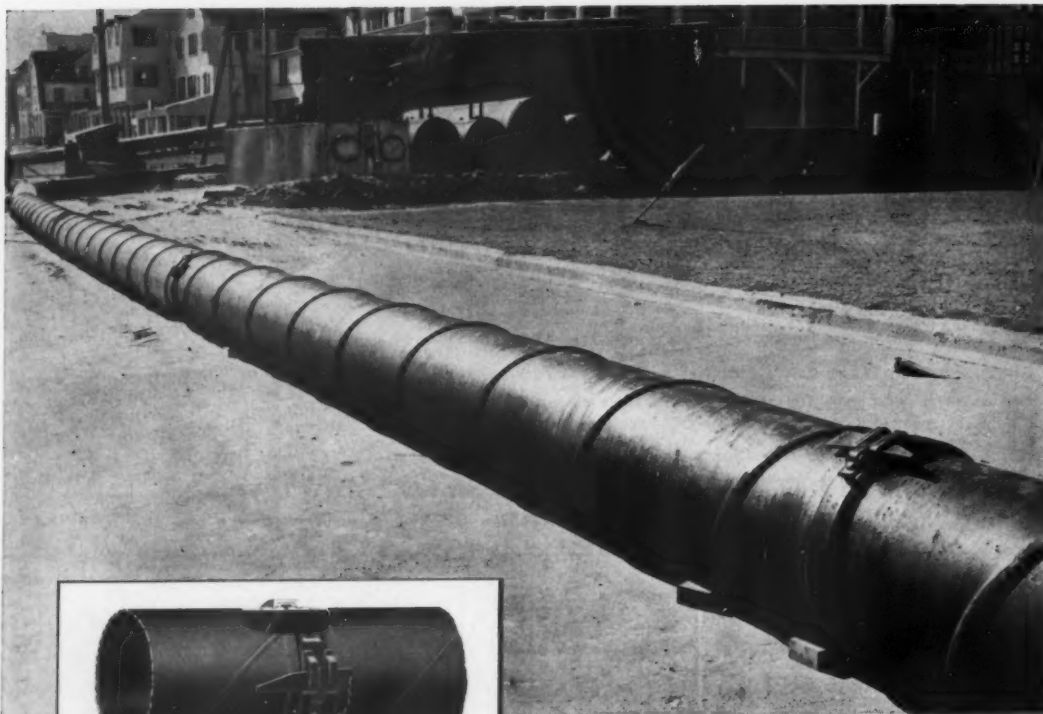


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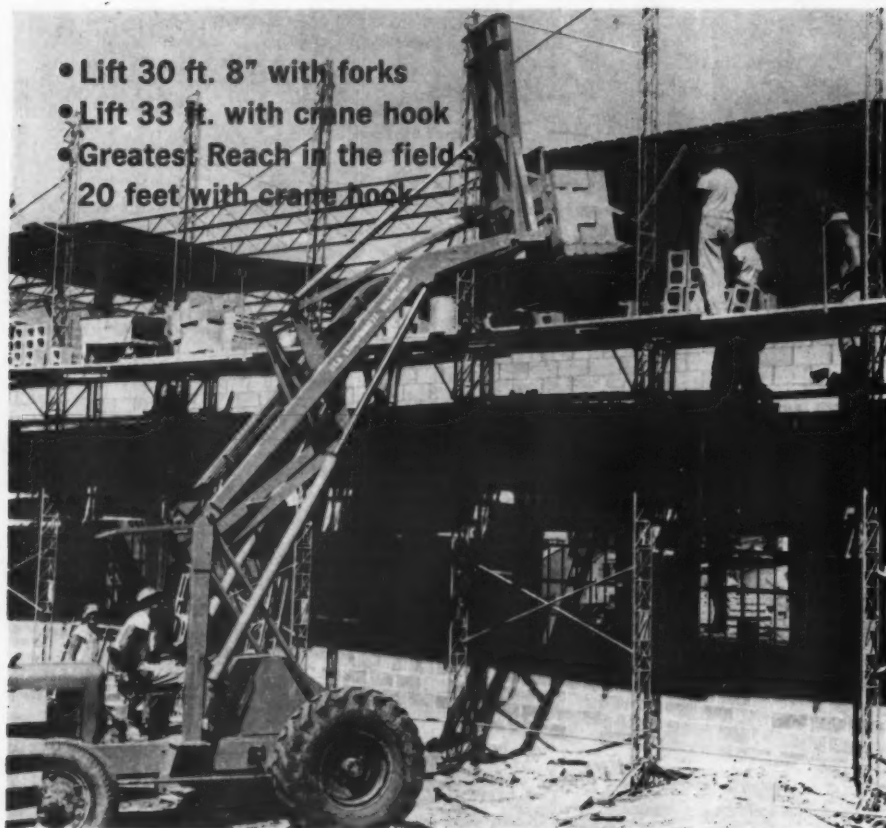
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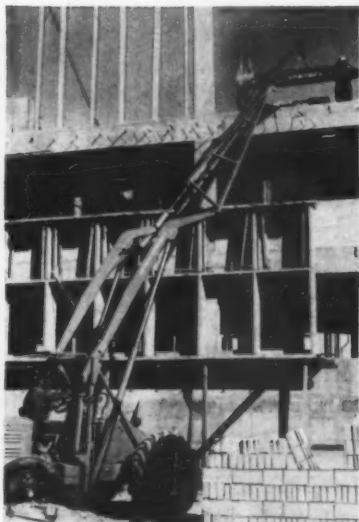
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